1086

THE MECHANICAL INDEX

1904

A complete index to the names and addresses of all manufacturers in the United States of mechanical appliances, machinery and tools operated by steam, electricity, water, hand or foot power. Carefully arranged and classified under sub-headings for quick reference, with a concise definition of the use for which each appliance is designed.

NEW YORK.
THE INDUSTRIAL PRESS.

T12
.S52
1904

LIBRARY of CONGRESS
Two Copies Received
JUL 23 1904
Copyright Entry
July 23-1904
CLASS a XXc. No.
92578
COPY B

Copyright 1904.
The Industrial Press.

CONTENTS.

Page

Finding List - - - - - - - - - - - - 3

SECTION I.—ELECTRICAL APPARATUS.

Alphabetical Index - - - - - - - - - - 101
Manufacturers of Electrical Apparatus - - - - - - - 137

SECTION II.—STEAM APPLIANCES AND POWER TRANSMISSION.

Alphabetical Index - - - - - - - - - - 233
Manufacturers of Steam Appliances and Power Transmission - 274

SECTION III.—RAILWAY EQUIPMENT.

Alphabetical Index - - - - - - - - - - 421
Manufacturers of Railway Equipment - - - - - - - 435

SECTION IV.—PRINTING, BOOKBINDING AND PAPER MAKING MACHINERY.

Alphabetical Index - - - - - - - - - - 459
Manufacturers of Printing, Bookbinding and Paper Making Machinery 465

SECTION V —TEXTILE MACHINERY.

Alphabetical Index - - - - - - - - - - 483
Manufacturers of Textile Machinery - - - - - - - 490

SECTION VI.—HOISTING AND CONVEYING AND MINING MACHINERY.

Alphabetical Index - - - - - - - - - - 511
Manufacturers of Hoisting and Conveying and Mining Machinery 524

SECTION VII.—AGRICULTURAL AND FLOUR MILL MACHINERY.

Alphabetical Index - - - - - - - - - - 557
Manufacturers of Agricultural and Flour Mill Machinery - - 566

SECTION VIII.—WOODWORKING MACHINERY.

Alphabetical Index - - - - - - - - - - 605
Manufacturers of Woodworking Machinery - - - - - - 615

SECTION IX.—MACHINE TOOLS AND METAL WORKING MACHINERY.

Alphabetical Index - - - - - - - - - - 717
Manufacturers of Machine Tools and Metal Working Machinery - 739

SECTION X.—MISCELLANEOUS - - - - - - - - - - 859

ADVERTISING SECTIONS.

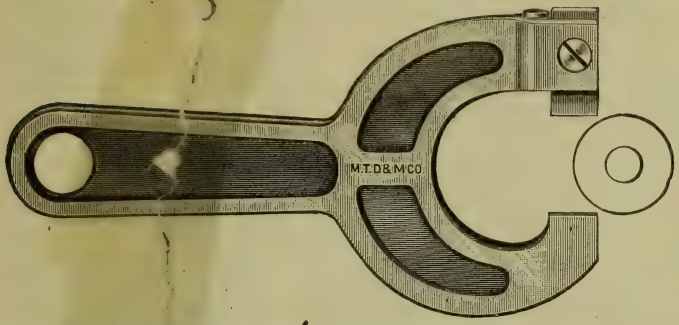
Adv. Page

Machine Shop Equipment and Electrical Supplies - - - - 1
Woodworking Machinery - - - - - - - - - - 75
Power Plant Equipment, Etc. - - - - - - - - 101

MORSE TWIST DRILL AND MACHINE CO.,

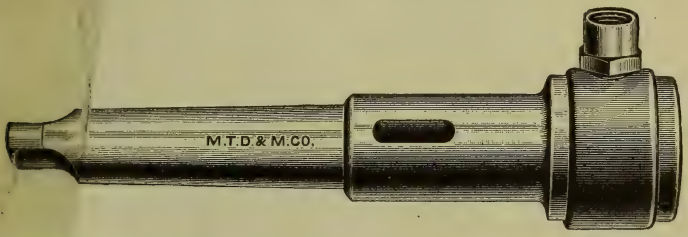
NEW BEDFORD, MASS., U. S. A.

We make Special Tools and Machines and solicit your correspondence.

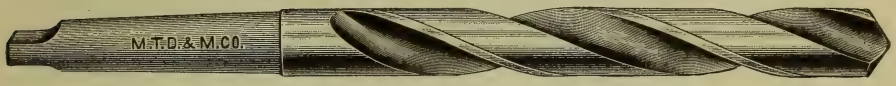


Makers of
Drills,
Reamers,
Chucks,
Cutters,
Gauges,

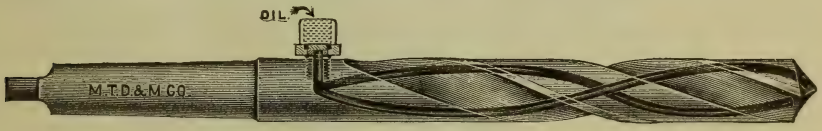
Drills with Oil Holes, Reamers with Oil Holes, Counterbores, Countersinks,



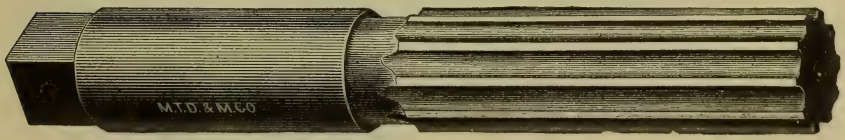
Arbors, Mandrels, End Mills, Taps and Dies, Screw Plates, Tap Wrenches,



Sleeves, Sockets, Metal Slitting Saws, Taper Pins, and Machinists' Tools.

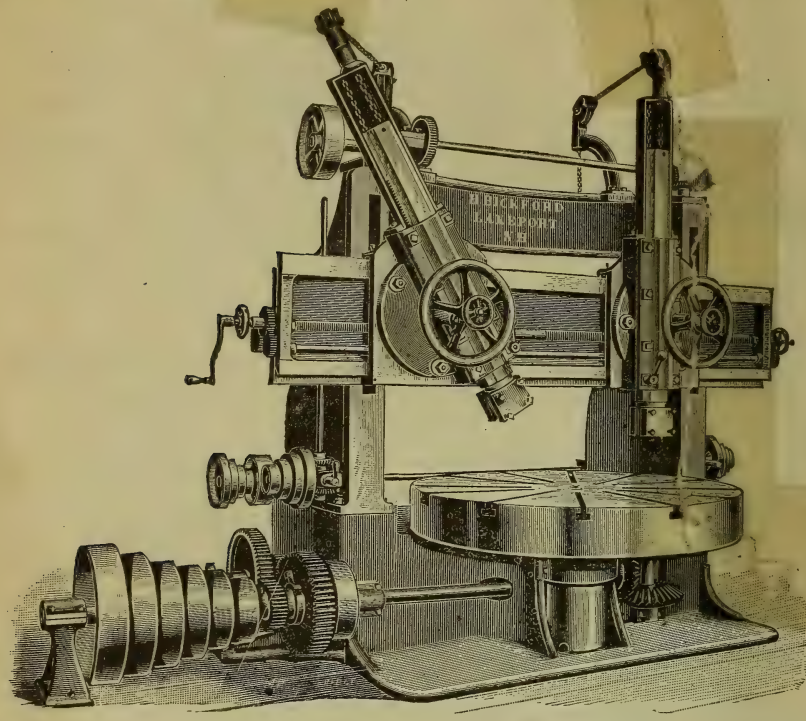


Catalogue sent free to any address.



SIX FOOT

Boring and Turning Mill.



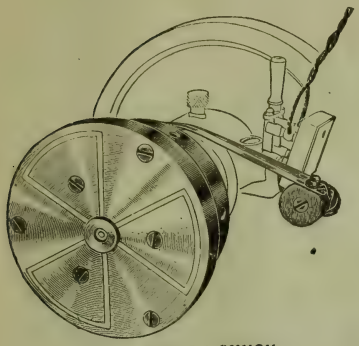
4, 5, 6 and 7 foot Boring and Turning Mills an Exclusive Specialty for the past fifteen years. Constantly improved. For photographs and further information address the manufacturer.

H. BICKFORD,

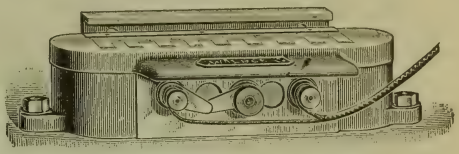
LAKEPORT, - - NEW HAMPSHIRE.

Walker's Magnetic Chucks.

WORK HELD
WITHOUT BOLTS OR GRIPPING JAWS.



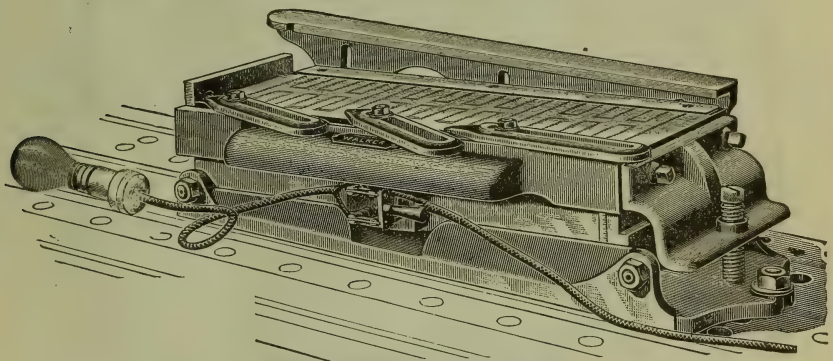
No. 0 ROTARY CHUCK.



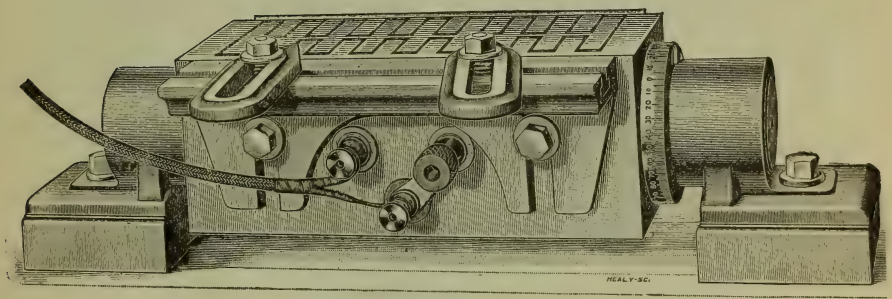
No. 1 FLAT SURFACE CHUCK.

CATALOG "B."

OVER 300 MAGNETIC CHUCKS IN USE.

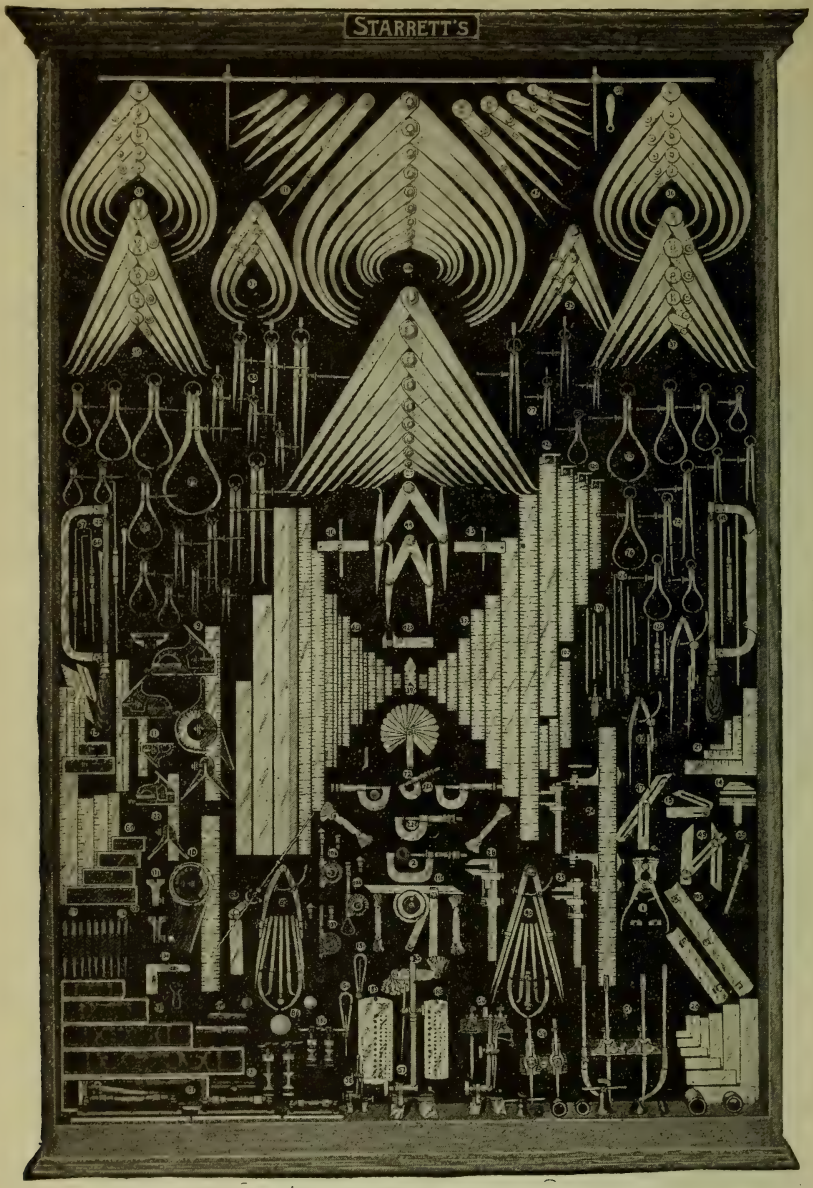


MAGNETIC CHUCK WITH TAPER SHOE.



UNIVERSAL SWIVELLING MAGNETIC CHUCK.

O. S. WALKER & CO., 150 Union St., Worcester, Mass., U. S. A.



CATALOGUE NO. 16AD OF THE

BEST OF FINE TOOLS FOR MACHINISTS, WOOD WORKERS AND DRAUGHTSMEN

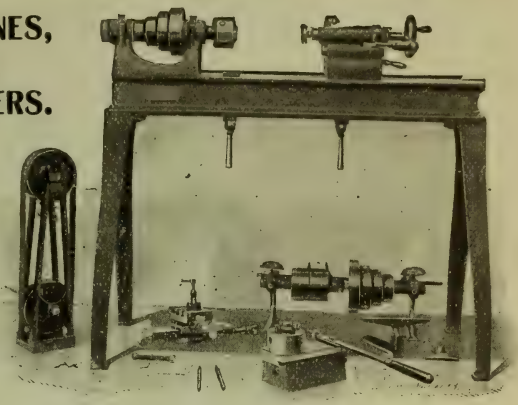
will be mailed on request.

THE L. S. STARRETT CO.,

ATHOL, MASS., U. S. A.

Automatic Machinery

**SCREW MACHINES,
SPEED LATHES,
CUTTER GRINDERS.**



Workmanship of our machines is of the highest order; all wearing surfaces accurately scraped and fitted; all parts interchangeable. Special attention is called to the superior features of our Speed Lathes. Every machine tested before leaving the works.

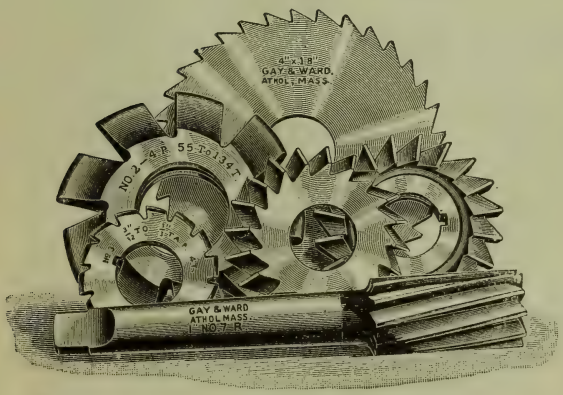
Catalogue mailed on request.

Automatic Machine Co.,

Greenfield, Mass., U. S. A.

GAY & WARD, INC.,

Designers and Manufacturers of



GEAR AND MILLING MACHINE CUTTERS AND SIMILAR TOOLS.

WRITE FOR CATALOGUE. *ESTIMATES FURNISHED.*

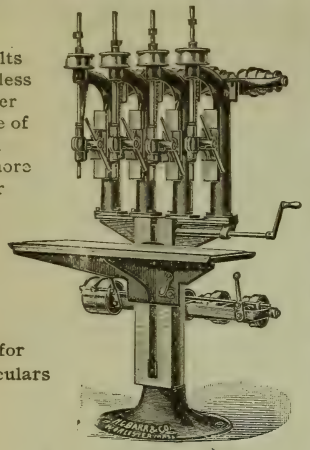
ATHOL, MASS., U. S. A.

IT WILL PAY YOU

to install one of our friction and gear driven

Upright Spindle Drilling Machines

No belts
Noiseless
Greater Range of Speed and more Power



Send for Particulars

H. G. BARR

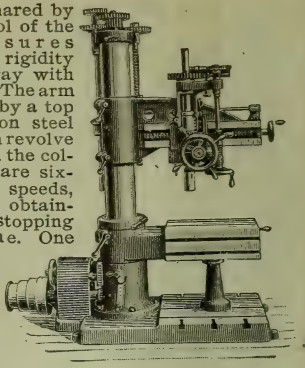
Winona and Nebraska Sts., Worcester, Mass.

The Stationary Column

Is the feature of the

Mueller Radial Drill

that is not shared by any other tool of the kind. It insures strength and rigidity and does away with all vibration. The arm is supported by a top cap resting on steel balls and both revolve easily around the column. There are sixteen spindle speeds, all instantly obtainable without stopping the machine. One conveniently placed lever to start, stop or reverse the spindle. Belt or motor drive.



Write for Book and Full Description.

Mueller Machine Tool Co.

CINCINNATI, OHIO

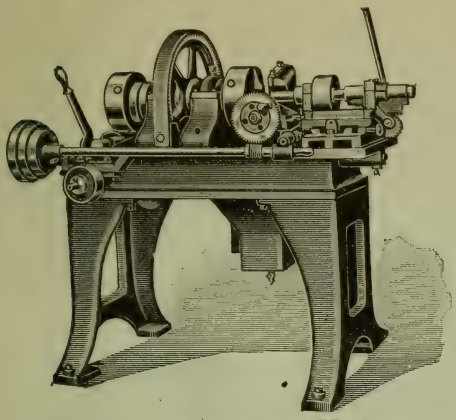
The Full Mounted Lightning Screw Plate.

These plates have a stock with each die. The dies are our Celebrated Adjustable Lightning Dies. Each stock is of correct length and weight to suit size of die. Several sizes of dies may be in use out of the same set at the same time. Send for Catalogue.

MADE BY

WILEY & RUSSELL MFG. CO., Greenfield, Mass., U. S. A.

CUTTING-OFF MACHINES.



2 inch Accelerated Speed Machine With Centering Attachment.

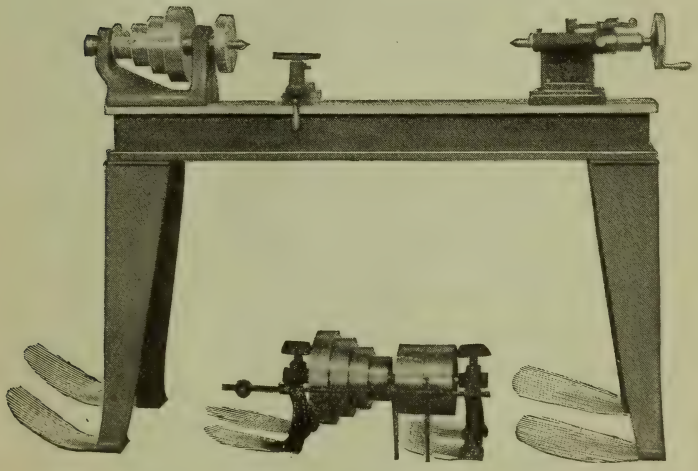
CONE-DRIVEN
AND
ACCELERATED SPEED
STYLES.

Sizes:
2 in., 3 in., 4 in., 5 in., 6 in.,
8 in. and 10 in.

Latest Patented Improvements.

MADE BY
HURLBUT-ROGERS MACHINE CO.
SO. SUDBURY, MASS., U. S. A.

J. G. BLOUNT & COMPANY,
EVERETT, MASSACHUSETTS.



Manufacturers of . . . .

NEW PATTERN SPEED LATHES,

Built in 11 in., 13 in. and 16 in. Swings.
Beds from 3 ft. to 12 ft. in length.

FOR SALE BY ALL THE LEADING DEALERS.

WRITE FOR CIRCULAR.

DO YOU BELIEVE

that it is well to purchase your tools from a concern that chooses its line from the best of all that's made by ALL manufacturers? A concern that for 53 YEARS has been studying the tool-requirements of expert mechanics; a concern doing an enormous business with tool users of all kinds and throughout every part of the country; a concern that is always earnestly striving to locate and place before skilled mechanics the very best that modern method and inventive genius has produced?

If you want anything in first class tools communicate with us at once. We issue catalogue No. 115 X of "Tools for Machinists and Metal Workers," 300 pages of this line exclusively.

HAMMACHER, SCHLEMMER & CO.
209 BOWERY, NEW YORK, SINCE 1848.

FINDING LIST.

		Heading	Page
Acetylene Gas Machines	See	83	886
Accumulators, Electric	See	28	142
Acid Pumps	See	304	408
Adding Machines		1	859
Addressing Machines		2	859
Adjusters, Cord		111	158
Adjusters, Roller		103	479
Admiralty Pumps	See	288	399
Adzing and Saddle Seat Shaping Machines		67	623
Adzing Machines, Chair Seat	See	67	623
Aerator—Coolers		46	875
Aerators		46	875
Aerators, Paint		125	900
Aerial Cables	See	69	542
Aerial Telephone Cables		69	149
Aeropher Pumps		249	389
Agitators, Chemic	See	11	491
Agitators (Pottery Machinery)		131	901
Agitators, Pulp		58	472
Agricultural Engines	See	36	311
Agricultural Implements		38	580
Agricultural Machinery			566
Air Brake Fittings and Couplings		11	438
Air Brake Hose		13	438
Air Brakes		10	438
Air Compressors		243	387
Air Cranes	See	36	532
Air Hoists	See	57	539
Air Motors	See	44c	316
Air Pumps		250	389
Air Pumps, Divers'		52	877
Air Valves, Automatic		138	345
Alarms, Electric			
Burglar		61	148
Fire, Manual		291	205
Fire, Thermostatic		292	206
Police		293	206
Alarms, Low Water		46	316
Alligator Shears		569	842
Alternating Current Arc Lamps		205	182
Alternating Current Dynamos		126	162
Alternating Current Motors		231	191
Alternators	See	126	162
Aluminum Wire		352	225
Amalgamating Pans and Barrels		92	550
Ammeter Switches	See	320	217
Ammeters	See	226	190
Ammonia Fittings	See	110	337
Ammonia Pumps		251	390

	Heading	Page
Ammonia Purifiers and Condensers	92	889
Angle Bender, Punch and Shear, Combined	592	847
Annealing Boxes	70	747
Annealing Furnaces	75	885
Annunciator and Telephone Drops	See 309	213
Annunciator Wire	355	226
Annunciators	10	137
Anvils	22	741
Apron Conveyors	See 22	529
Arbor Presses	89	749
Arbors, Saw	See 351	683
Arc Lamp Clutches	92	153
Arc Lamp Hangers	171	174
Arc Lamp Spark Arresters	302	209
Arc Lamps	205	182
Arc Light Carbons	75	150
Arc Light Cut-Outs	115	160
Arc Light Globes	162	172
Arch Bar Drills	108	753
Armature Cores	14	138
Armature Disk Notching Presses	509	829
Armature Disks	15	139
Armatures, Dynamo and Motor	13	138
Arms, Cross	113	159
Mast	225	189
Arresters, Lightning	216	186
Spark, Arc Lamp	302	209
Artesian and Deep Well Engines	See 252	390
Artesian and Deep Well Pumps	252	390
Artesian Well Machinery	See 193	923
Asphalt Machinery	3	859
Aspirators, Flour Mill	71A	594
Assaying Balances	147	907
Astronomical Instruments	See 151	908
Attachment Plugs	247	197
Attrition Mills	85	598
Auger Machines (Brick Machinery)	14	865
Auger Machines, Sewer Pipe	153	910
Augers, Boring Machine	276	668
Automobile Controllers	107	157
Automobile Motors, Electric	232	192
Gasoline	See 29	304
Steam	See 113	894
Automobiles	See 113	894
Auxiliary Machines, Knitting	22	494
Cutters, Flat and Circular Rib	23	494
Cuttting and Folding Machines	24	495
Eyelet Machines	25	495
Loopers	27	495
Sewing and Finishing Machines	26	495
Turners, Coth	28	495
Axle Cap Fitting Machines	231	662
Axle Gaining Machines	232	662
Axle Lathes	182	769
Axle Tree Lathes	332	679
Axles, Car, Locomotive, etc.	See 2	435
Back Beading Machines, Chair	68	624
Back Benders, Chair	69	624

	Heading	Page
Back Cutters, Chair	70	624
Back Gainers, Chair	71	624
Back Knife Lathes	333	679
Back Planers, Chair	72	624
Back Pressure Valves	139	346
Back Rests, Lathe	344	682
Back Rounders, Chair	73	624
Back Saws, Chair	74	624
Back Tenoning Machines, Chair	75	624
Backboards and Boxes, Telephone	48	145
Backing Machines, Book	2	465
Backing and Rounding Machines	3	465
Bag Filling Machines	4	859
Bag Looms ..... See	63	502
Bag Making Machines, Paper ..... See	20	467
Baggage Trucks	71	543
Bagging, Weighing and Loading Machines	1	566
Bail Benders	91	626
Bakers' Machinery	5	860
Bakers, Wire	622	850
Balance Valves	140	347
Balances, Assaying	147	907
Balancing Machines, Knife	329	679
Bale Breakers ..... See	13	492
Baling Presses	133	902
Ball Bearings	254	786
Ball and Lever Safety Valves	153	354
Ball and Pebble Mills ..... See	45	875
Ball and Socket Hangers, Adjustable	208	374
Balls, Carbon	77	151
Steel	253	786
Ballast Pumps ..... See	288	399
Ballast Spreaders ..... See	66	449
Ballast Unloaders ..... See	55	447
Balling Machines	47	499
Twine	3	490
Band Cutters	9	569
Band Re-Saws	393	694
Band Saw Blades, Metalworking	415	813
Woodworking	131	633
Band Saw Brazing Frames	105	628
Band Saw Carriage Offsets	106	628
Band Saw Filers	107	628
Band Saw Filing Vises ..... See	108	629
Band Saw Machines, Metal	563	841
Woodworking	418	702
Band Saw Mills	197	651
Log ..... See	196	651
Band Saw Setting and Filing Frames	108	629
Band Saw Tools	109	629
Band Saw Wheel Grinders	110	629
Band and Circular Saw Mills	198	652
Bar Shears	570	842
Bar Straightening Machines	604	848
Bare Copper Wire	353	225
Bark Mills (Tanners' Machinery)	99	892
Barkers, Wood	59	472
Barrel Elevators	45	536

	Heading	Page
Barrel Heaters	14	616
Barrel Hoop Machinery...See	1	615
Barrel Leveling Machines	25	617
Barrel Machinery	1	615
Barrel Steamers	37	619
Barrels, Thrashing ...See	87	749
Tumbling	87	749
Barrels and Pans, Amalgamating	92	550
Bars, Commutator	97	153
Grate	80	328
Base Plates	163	357
Bases, Incandescent Lamp	21	139
Trolley	22	139
Basket Machinery	6	861
Batteries, Electric		
Closed Circuit	23	139
Dry, Open Circuit	26	141
Electro-Plating	24	140
Gravity ...See	23	139
Liquid, Open Circuit	27	142
Medical	25	140
Open Circuit, Dry	26	141
Open Circuit, Liquid	27	142
Storage	28	142
Batteries, Stamp ...See	119	553
Battery Carbons	76	150
Battery Cells ...See	197	181
Battery Clamps	83	151
Battery Coppers	110	158
Battery Cut-Outs	116	160
Battery Fans, Electric Motor	135	166
Battery Gages	158	172
Battery Jars	197	181
Battery Porous Cups...See	257	199
Battery or Toy Motors, Electric	233	192
Battery Zincs	362	229
Beaders, Shoe	158	912
Beading Machines, Chair Back	68	624
Beading Machines, Metal	456	821
Beading and Flanging Machines, Metal	457	822
Beam or Slide Calipers	334	802
Beam Punches	540	836
Beaming Machines	48	500
Beams, Brake	7	436
Bean Sorters	63	590
Bearings, Ball	254	786
Flexible Roller and Anti Friction...See	255	786
Roller	255	786
Self Oiling ...See	255	786
Bearings, Centre, Side, Journal, etc	3	435
Bearings, Shafting	162	357
Base Plates	163	357
Blocks, Pillow	164	358
Boxes, Journal	165	358
Brackets, Wall	166	359
Beaters, Egg and Icing	5	860
Beating and Washing Engines	60	472
Becks, Dye ...See	17	493

	Heading	Page
Beef Shavers	20	866
Beer Coolers	12	864
Beer Filters	12	864
Beer Pasteurizing Apparatus	9	862
Beer and Ale Hand Pumps	279	397
Beet Diggers	18	572
Beet Planters	48	584
Beet Pullers	55	587
Beet Pulp Driers	58	878
Bell Ringers, Locomotive	4	436
Bellows	7	861
Bells, Bridging	See 222	188
Electric	35	144
Electro-Mechanical	See 164	173
Extension	See 222	188
Magneto	222	188
Belt Carriers	174	362
Belt Conveyor Trippers	238	386
Belt Conveyors	22	529
Belt Dressing	175	363
Belt Fasteners	176	363
Belt Folding Machines, Rubber	144	906
Belt Lacing Machines	177	364
Belt Sanders	See 407	698
Belt Sanding Machines	407	698
Belt Slitters, Rubber	144	906
Belt Stretchers, Rubber	144	906
Belt Tighteners	178	364
Belting	167	360
Canvas, Stitched and Cotton	168	360
Chain or Link	169	360
Hair	170	360
Leather	171	361
Rawhide	172	361
Rubber	173	362
Bench Blocks, Joiners'	325	678
Bench Boring Machines	263	666
Bench Drills	109	753
Bench Foot Presses	511	829
Bench Grinding Machines	145	761
Bench Lathes	183	769
Bench Levels	401	811
Bench Presses	510	829
Bench Shears	See 582	844
Bench Whirlers (Pottery Machinery)	131	901
Benches, Cabinet Makers'	260	665
Saw	412	699
Wire Drawing	631	851
Bending Machines, Metal	458	822
Hydraulic	459	822
Pipe or Tube	460	822
Plate	461	822
Tire	33	742
Bending Machines, Wood	76	624
Bail	91	626
Chair Back	69	624
Hoop	15	616
Bending Machines, Binders' Metal	4	465

	Heading	Page
Bending and Forming Machines....See	483	825
Bending and Straightening Machines	463	822
Bent Pipe	102	336
Bevel Gages	371	807
Bevel and Mitre Rip-Saw Machines	397	695
Bevel Protractors	408	811
Bevel Shears	572	843
Bevel Straight Edges	364	806
Beveling Machines, Book Binders'	5	465
Electrotypers'....See	89	477
Bevels		
Combination	330	801
Universal	331	802
Bicycle Drills	109	753
Bicycle Machinery	1	739
Bicycle Taps	434	816
Bicycle Vises	314	798
Bilge Pumps	289	400
Billet Cars	81	546
Billet Shears....See	573	843
Binder Twine Machinery	4	490
Binders	2	566
Binders' Shears	29	468
Binders and Bundlers, Lath	167	642
Binders and Trimmers, Lath	168	642
Binding Posts....See	103	156
Bit-Brace Taps	435	816
Bit Setters	354	684
Bits, Dovetailing....See	115	630
Bits, Machine	261	665
Blacking Machinery....See	17	493
Blacksmiths' Bellows	7	861
Blacksmiths' Drills	111	754
Blacksmiths' Hand Hammers	28	741
Blacksmiths' Taper Mandrels	31	742
Blacksmiths' Tools and Appliances	21	741
Blacksmiths' Vises	315	798
Blade Grinders and Scraper Edge Turners	156	640
Blades, Band Saw, Metal	415	813
Hack Saw	416	813
Blades, Saw, Woodworking	130	633
Blanking Presses	512	830
Blast Furnaces	76	885
Blasting Apparatus, Electric	39	144
Bleaching Machinery	11	491
Blending and Sifting Machines, Flour....See	71	594
Blind, Door and Sash Machinery	409	699
Blind Slat Crimpers	286	670
Blind Slat Re-Saws	392	694
Blind Wiring Machines	460	714
Block Drills	112	754
Block Machines, Corner	285	670
Block System Signals....See	76	451
Blocking Machines, Horse Collar	88	889
Blocking Presses, Bookbinders'	19	466
Blocking Saw Machines....See	337	680
Blocks, Branch....See	117	160
Fuse....See	117	160

	Heading	Page
Blocks, Bull, Wire Working	624	851
Engraving	367	806
Blocks, Chain Hoisting	1	524
Differential Chain	2	524
Pillow	164	358
Pulley	See 3	524
Tackle	3	524
Blocks, Hat	90	889
Blocks, Printers' Plate Holding	96	478
Bloom and Billet Shears	573	843
Blow Off Tanks	133	343
Blow Off Valves	141	347
Blowers	8	861
Blowing Engines	22	301
Blue Print Machines	54	877
Bluing Machines	See 17	493
Board Lifters, Steam	222	660
Boards, Cross Connecting	See 309	213
Panel	242	196
Tablet	See 242	196
Bobbin Winders	48A	500
Bobbins, Spools, Shuttles, etc.	72	503
Body Bolsters, Car, etc.	5	436
Body Ironers	95	890
Boiler Cleaners, Mechanical	48	317
Flue or Tube	49	317
Boiler Compound Feeders	63	322
Boiler Feed Pumps	See 304	408
Boiler Feeders	62	322
Boiler Feeding Injectors	88	331
Boiler Gaskets	See 75	326
Boilermakers' Taps	436	817
Boiler Oil Feeders	64	323
Boiler Shell Drills	113	754
Electric	114	754
Boiler Test Pumps	309	413
Boiler Tube Expanders	60	322
Boilers	1	274
Flue	2	274
Horizontal Tubular, Portable	See 6	275
Horizontal Tubular, Stationary	See 6	275
House Heating	5	275
Locomotive, Tubular	9	290
Marine, Tubular	10	292
Marine, Water Tube	See 15	298
Return Flue	See 2	274
Return Tubular	11	295
Scotch Tubular	12	296
Tubular	6	275
Two Flue	See 2	274
Vertical Tubular, Portable	See 6	275
Vertical Tubular, Stationary	See 6	275
Water Tube	15	298
Water Tube, Marine	See 15	298
Bolsters, Car Body and Truck	5	436
Bolt Cutters	46	743
Bolt Dies	51	744
Bolt Equalizers	2	615

	Heading	Page
Bolt Forging Machines	54	745
Bolt Heading Machines	55	745
Bolt Heading, Upsetting and Forging Machines	56	745
Bolt Lathes	184	770
Bolt Pointing Machines	61	746
Bolt Threading Machines	67	746
Bolt and Nut Head Milling Machines	57	745
Bolt and Nut Machinery	42	743
Bolt and Rivet Clippers	44	743
Bolters	72	594
Bolters, Lath	169	642
Bolters and Mills, Lath	172	644
Bolters and Sappers, Shingle	212	658
Bolting and Capping Machines, Wheel	233	662
Bolting Reels	94	600
Bolting Saw Machines	420	703
Bolting-Up Machines	92	626
Bonds, Rail	263	201
Bone Mills	44	874
Book Binding Machinery	1	465
Book Index Cutters	10	466
Book Stitching Machines, Thread	34	468
Wire	35	468
Book Trimming Machines	36	469
Boosters	See 229	191
Booths, Sound Proof, Telephone	44	144
Boot Machinery	See 158	912
Boots, Elevator	4	525
Borers, Bung	3	615
Handle	94	627
Boring Bars, Cylinder	See 94	750
Boring Lathes	185	770
Boring Machine Augers	276	668
Boring Machines, Brush	19	866
Boring Machines, Electric Wiring	44A	145
Boring Machines, Metal	90	750
Car Box	91	750
Car Wheel	92	750
Cylinder	93	750
Cylinder, Portable	94	750
Horizontal	95	750
Vertical	96	750
Boring Machines, Wood	262	665
Bench	263	666
Car	264	666
Carpenter's Hand	265	666
Chair	77	624
Floor	266	666
Gang	See 269	667
Horizontal	See 262	665
Hub	234	662
Multiple	269	667
Pin Hole	270	667
Portable	271	667
Portable Radial	272	667
Post	273	667
Pulley	274	668
Spindle	275	668

	Heading	Page
Boring and Boxing Machines	235	662
Boring, Chucking and Turning Machines, Automatic	104	752
Boring, Marking and Measuring Machines, Floor Board	305	674
Boring and Drilling Machines	97	751
Boring and Milling Machines	98	751
Boring, Milling and Drilling Machines	99	751
Boring and Tapping Machines	100	752
Boring and Turning Mills	101	752
Boring Mill Chucks	257	787
Boring and Screw Driving Machines, Wheel	236	662
Boring Tools	301	795
Bottle Case Machines	43	619
Bottlers' Machinery	9	862
Box Cars	25	440
Box Board Cut-Off Saw Machines	58	622
Box Board Jointers	52	620
Box Board Matchers	55	621
Box Board Printers	57	622
Box Fasteners	47	620
Box Grooving Machines	50	620
Box Hinging Machines	51	620
Box Lining Machines	53	621
Box Machines, Cheese	46	875
Box Machines, Core	284	670
Lock Corner	54	621
Box Machines, Paper, Automatic	38	469
Box and Crate Machinery	40	619
Box Machinery, Cigar	44	619
Box Nailing Machines	56	621
Box Shook Fasteners	48	620
Box Tools	302	796
Boxes, Annealing	70	747
Boxes, Journal	165	358
Railway Car	42	444
Boxes and Backboards, Telephone	48	145
Boxes, Junction and Outlet	198	181
Resistance	See 333	222
Service, Electric	See 101	155
Starting	See 281	204
Switch, Open and Concealed, and Marine	47A	145
Telephone	48	145
Boxes or Frames, Wall	204	372
Boxing and Boring Machines, Wheel	235	662
Boxing and Wrapping Machines	11	863
Braces, Ratchet	332	802
Bracket Hangers	See 166	359
Brackets, Fixture	See 144	169
Pole	See 50	145
Brackets, Wall	166	359
Brackets and Pins, Insulator	50	145
Braid Rolling Machines	See 1	490
Braiding Machinery	1	490
Electric Wire	See 187	179
Brake Beams	7	436
Brake Couplings and Fittings	See 11	438
Brake Shoes	8	437
Brakes	9	437
Air	10	438

	Heading	Page
Brakes and Attachments	6	436
Brakes, Bakers'	5	860
Bran Dusters	78	596
Branch Blocks ..... See	117	160
Branding Machines, Cork	9	862
Branding Machines, Ham	20	866
Brass Melting Furnaces	77	885
Brass Pipe Fittings	111	337
Brass Sawing Machines ..... See	564	841
Brass Workers' Lathes	186	770
Brazing Clamps	111	629
Brazing Frames, Band Saw	105	628
Brazing Tables	2	739
Brazing Tables, Saw	112	630
Brazing Tongs	113	630
Bread Racks, Bakers'	5	860
Breakers, Circuit	82	151
Breakers, Hemp Fiber ..... See	7	491
Breakers, Stone ..... See	43	873
Breakers and Crushers, Rock, etc.	43	873
Brewers' Grain Driers	58	878
Brewery Pumps ..... See	304	408
Brewery and Malt House Machinery	12	864
Brewery and Malt House Machinery Accessories	13	864
Brick Cars	82	547
Brick Driers ..... See	59	879
Brick Kilns	59	879
Brick Machinery	14	865
Brick Machines, Dry Press	15	865
Brick Molds	15	865
Brick Presses, Dry Press	15	865
Brick Presses, Sand Lime	16	866
Brick Re-Presses	15	865
Brick Steamers, Sand Lime	16	866
Brick Trucks	72	543
Bridge Builders' Wrenches	448	820
Bridge Drills	115	754
Bridge Erecting Engines ..... See	30	307
Bridges, Wheatstone ..... See	333	222
Bridging Bells ..... See	222	188
Brine Coolers	92	889
Briquette Machinery	17	866
Broaching Machines and Presses	464	823
Broaching Presses ..... See	464	823
Broom Corn Harvesters	32	578
Broom Machinery	18	866
Brush Holders	59	147
Brush Machinery	19	866
Brushes	54	146
Carbon	55	146
Flue ..... See	49	317
Graphite	56	146
Sheet Metal	57	146
Woven Wire	58	147
Brushing Machines, Leather	97	891
Buckers, Stave	29	618
Bucket Elevators	46	536

	Heading	Page
Buckets, Clam Shell	5	525
Coal and Ore	6	525
Dredging and Excavating	7	525
Elevator	8	526
Buckle Tongue Machines	623	850
Buffers, Car	14	438
Buffing Lathes ...See	208	773
Buffing Machines		
Brick	14	865
Leather	97	891
Buffing and Polishing Machines, Metal	465	823
Buggies, Lumber	185	648
Buhr Stone Mills	86	598
Bulb Cleaners...See	275	202
Bull Blocks, Wire Drawing	624	851
Bulldozers	467	823
Bumping or Horning Hammers	488	825
Bumping Posts	58	448
Bunchers, Clover	3	566
Bundlers and Binders, Lath	167	642
Bundling Machines, Signature...See	23	467
Bung Borers	3	615
Burglar Alarm Systems	61	148
Burners, Electric Gas-Lighting...See	157	172
Burners, Paint	124	899
Burr Pickers...See	54	501
Burring Machines, Nut	43	743
Tinsmiths'	611	849
Burrs, Knitting Machine	85	505
Bushings	179	364
Insulating	63	148
Butchers' and Packing House Machinery	20	866
Butter Cutters	46	875
Butter Molds	46	875
Butter Printers	46	875
Butter Workers	46	875
Buttercup Cutters, Confectioners'	38	871
Butting Machines	164	641
Flooring	307	675
Butting Machines, Ivory	129	901
Button Machinery	21	867
Buttons or Treads, Floor...See	261	200
Buttons, Push	261	200
Buzz Planers	380	690
Buzzers ...See	35	144
Cabbaging Presses	514	830
Cabinet Makers' Benches	260	665
Cabinet Makers' Saw Machines	421	703
Cable Braiding Machinery	1	490
Cable Chains	12	527
Cable Conveyors	23	529
Cable Covering Machines...See	187	179
Cable Hangers	172	175
Cable Railways	9	526
Cable Terminals	67	149
Telephone ...See	67	149
Cable Testing Apparatus...See	333	222

	Heading	Page
Cables	68	149
Aerial Telephone	69	149
Interior and Auto-Thermo	70	149
Lead Encased	71	149
Submarine	72	150
Cableways, Suspension	10	526
Cages, Mining	97	550
Cake Depositors	5	860
Cake Formers, Oil Mill	121	899
Cake Machines	5	860
Calculating Machines...See	1	859
Calender Roll Grinding Machines...See	166	765
Calender Rolls, Paper	71	474
Calenders, Cloth...See	11	491
Calenders, Paper Finishing	61	473
Calico Printers' Machinery...See	55	501
Caliper Gages	372	807
Caliper Squares	425	815
Calipers		
Beam or Slide	334	802
Chisel	345	682
Firm Joint	335	802
Flue or Tube	46A	316
Gear Tooth	336	802
Hermaphrodite	337	802
Inside	338	803
Inside and Keyhole	339	803
Lock Joint	340	803
Micrometer	341	803
Outside	342	803
Pocket Slide...See	334	802
Screw Thread	344	803
Spring	345	803
Thread	346	804
Vernier	347	804
Yankee Thread	348	804
Calipers and Dividers	333	802
Calking Machines, Pipe	500	828
Call Boxes, District Telegraph...See	121	161
Calsing Furnaces	80	886
Cam Presses, Double Action	515	830
Camel's Hair Belting...See	170	360
Can Making Machinery...See	455	821
Can Soldering Machines	600	848
Cancelling Machines, Letter	101	892
Candle Molding Machines	22	867
Candy Coolers	38	871
Candy Molds	38	871
Cane Cutting and Shredding Machines	169	916
Cane Mills	169	916
Canning House Machinery	23	867
Cans, Dye House...See	94	506
Roving	94	506
Cant Trips, Steam	223	660
Cantilever Cranes	28	530
Canvas Belting	168	360
Cap Fitting Machines, Axle	231	662
Capping Machines	233	662

	Heading	Page
Capping Machines, Can	23	867
Capstans	104	893
Capsule Machinery	See 127	900
Car Axles	See 2	435
Car Boring Machines	264	666
Car Box Boring Machines	91	750
Car Box Grinding Machines	146	761
Car Brass Grinding Machines	147	762
Car Buffer Drills	116	754
Car Buffers	14	438
Car Couplers	See 37	443
Car Cut-Off and Gaining Machines	277	668
Car Diaphragms	15	438
Car Doors	See 16	439
Car Fenders	17	439
Car Gates	18	439
Car Heating Apparatus, Electric	175	176
Car Heating and Lighting Apparatus	19	439
Car Lighting Apparatus, Electric	79	151
Car Mortising Machines	359	685
Car Movers	67	450
Car Platforms	20	439
Car Roofing	21	439
Car Seals	22	440
Car Spring Machinery	468	823
Car Springs	50	446
Car Tenoning Machines	449	713
Car Unloaders	55	447
Car Vestibules	23	440
Car Wheel Boring Machines	92	750
Car Wheel Chucks	258	787
Car Wheel Grinding Machines	148	762
Car Wheel Tires	51	446
Car Wheels	56	447
Car Wiring Cleats	86	152
Carbon Balls	77	151
Carbon Brushes	55	146
Carbon Holders	177	176
Carbon Plates, Diaphragms, Balls, Points, etc	77	151
Carbonating Apparatus	10	863
Carbons, Arc Light	75	150
Battery	76	150
Carborundum Wheels	328	801
Card Clothing	73	504
Card Cutters	51	471
Card Grinders	74	504
Carders' Tools	75	504
Carding Machines	34	497
Cards, Jacquard	84	505
Carousels	24	868
Carpenters' Hand Boring Machines	265	666
Carpet Cleaning Machines	25	868
Carpet Looms	64	502
Carpet Machinery	12	491
Carpet Setting Frames	See 12	491
Carpet Stretchers	26	868
Carriers, Belt	174	362
Carriers, Cash and Package	27	868

	Heading	Page
Carriers, Hay	4	567
Carriers and Carriages	11	526
Carriage Off-Sets, Band Saw	106	628
Carriage Rollers, Saw Mill...See	196	651
Carriages, Saw Mill	205	654
Carroting Machines, Fur	81	886
Cars, Industrial Railway	80	546
Billet	81	546
Brick and Clay	82	547
Charging	83	547
Core Oven	84	547
Drier	85	547
Foundry	86	548
Mine	87	548
Ore...See	87	548
Cars, Railroad	24	440
Ballast Dumping...See	27	440
Box	25	440
Construction	26	440
Dump	27	440
Freight	28	441
Hand, Inspection and Push	29	441
Logging	30	442
Passenger	31	442
Plantation	33	442
Refrigerator	24	443
Street Railway	32	442
Velocipede...See	29	441
Wrecking	36	443
Cartridge Machinery	469	823
Cartridge Presses...See	519	831
Carvers' and Slaters' Tools	166	915
Carving Machine Cutters...See	115	630
Carving Machines, Wood	278	669
Spindle...See	278	669
Case Makers, Book	7	465
Case Smoothing Machines	8	465
Cash Carriers	27	868
Cash Registers	28	869
Cast Iron Pipe	103	336
Cast Iron Pipe Fittings	112	338
Cattle Guards	59	448
Caustic Soda Plants...See	11	491
Cautery Rheostats	279	203
Ceiling Fans, Alternating Current, Electric	136	166
Ceiling Fans, Direct Current, Electric	137	167
Ceiling and Flooring Gages	315	676
Cells, Battery...See	197	181
Celluloid Machinery	29	869
Cement Machinery	30	869
Cement Mills	44	874
Cement Screens	152	909
Cement Testers	174	918
Center Bearings...See	3	435
Center Decks...See	177	645
Center Drilling and Reaming Chucks	259	787
Center Gages	373	807
Center Grinding Machines	149	762

	Heading	Page
Center Keys	398	810
Center Punches	409	812
Center Squares	426	815
Centering Machines	102	752
Centers, Planer	228	780
Central Tank System Lubricators	92	332
Centrifugal Pumps	257	391
High Duty	258	392
Horizontal	259	393
Phosphate Dredging	260	393
Vertical	261	393
Centrifugal Wringers, Laundry	95	890
Centrifugals, Sugar	169	916
Chain Belting	169	360
Chain Conveyors	24	530
Chain Drills	360	805
Chain Hoisting Blocks	1	524
Chain Hoists	52	538
Chain Pumps	See 278	396
Chain Saw Mortising Machines	360	686
Chain Testers	175	919
Chains, Cable and Marine	12	527
Coil	13	527
Crane	14	527
Differential Pulley Block	15	528
Dredge	16	528
Hoist	17	528
Log	18	528
Sprocket Wheel	19	528
Chains, Transmission	202	372
Chair Machinery	66	623
Adzing and Saddle Seat Shaping Machines	67	623
Back Beading Machines	68	624
Back Benders	69	624
Back Cutters	70	624
Back Gainers	71	624
Back Planers	72	624
Back Rounders	73	624
Back Saws	74	624
Back Tenoning Machines	75	624
Bit Mortising Machines	83	625
Boring Machines	77	624
Cutting Off Machines	78	625
Grooving Machines	82	625
Presses	84	626
Rounders	85	626
Chandelier or Fixture Switches	313	214
Chandeliers, Electric	See 144	169
Changers, Pole	See 262	200
Channeling Machines	99	550
Charging Cars	83	547
Chaser Grinding Machines	150	762
Chaser Mills	14	865
Chasers, Drug	127	900
Paint	125	900
Pottery	131	901
Check Perforators	31	869
Check Valves	142	348

	Heading	Page
Checks, Shuttle	96	507
Cheese Box Machines	46	875
Cheese Presses	46	875
Chemic Agitators	See 11	491
Chicory Grinding Mills	44	874
Chime Whistles	159	356
Chippers, Wood	62	473
Chipping Hammers	See 492	826
Chipping Vises	316	798
Chisel Calipers	345	682
Chisels		
Cold	349	804
Mortisers'	366	686
Wire	625	851
Chocolate Coating Machines	38	871
Choppers, Meat	20	866
Choppers, Paper Tube	39	469
Chronometer Valves	143	349
Chucking Lathes	221	777
Chucking Machines	See 221	777
Chucking Machines, Woodworking	279A	669
Chucking, Boring, and Turning Machines, Automatic	104	752
Chucks	256	787
Boring Mill	257	787
Car Wheel	258	787
Center Drilling and Reaming	259	787
Combination	See 267	788
Cutting-Off Machine	261	787
Draw	262	787
Drill	263	787
Drill, Hand	See 263	787
Expanding	264	788
Independent	See 267	788
Jewelers'	266	788
Lathe	267	788
Magnetic	268	789
Nipple	269	789
Planer	270	789
Tapping	271	789
Universal	See 267	788
Chucks, Woodworking Lathe	346	682
Churns, Cream	46	875
Chutes, Locomotive Coaling	60	448
Cider and Wine Presses	141	905
Cigar Box Machinery	44	619
Cigar Casers	183	920
Cigarette Machines	183	920
Cinder Mills	44	874
Circle Shears	574	843
Circles and Fallers	76	504
Circuit Breakers	82	151
Circular and Flat Rib Cutters	23	494
Circular Folding Machines	See 56	472
Circular Grates	82	329
Circular Knitting Machines	29	495
Circular Re-Sawing Machines	See 391	693
Circular Saw Blades	132	633
Circular Saw Machines	422	704

	Heading	Page
Circular Saw Machines, Metal Cutting	564	841
Circular Saw Mandrels	351	683
Circular Saw Mills	199	652
Circulating Pumps ..... See	257	391
Circulators, Feed Water	46B	316
Cistern Pumps ..... See	278	396
Clam Shell Buckets	5	525
Clamp Couplings	191	368
Clamp Drills	117	754
Clamp Hub Pulleys	216	377
Clamps, Battery	83	151
Wire Splicing ..... See	106	157
Clamps, Brazing	111	629
Door	280	669
Joiners'	281	669
Saw Filing	143	637
Clamps, Machinists' Malleable	351	804
Steel	352	804
Clamps, Splicing ..... See	106	157
Clamps, Steam	47	317
Clapboard Machinery	282	669
Clarifiers, Sugar	169	916
Claw Bars	88	454
Clay Cars	82	547
Clay Cleats	87	152
Clay Driers	58	878
Clay Grinding Mills	44	874
Clay Screens	152	909
Clay Steamers	15	865
Clay Trucks	72	543
Clay and Porcelain Insulators	192	180
Clay and Porcelain Tubes ..... See	342	224
Clay Working Machinery	32	869
Cleaners, Boiler, Mechanical	48	317
Cleaners, Flue or Tube	49	317
Cleaners, Bulb ..... See	275	202
Cleaners, Cotton	40	872
Cleaners, Track	83	453
Cleaners and Replacers, Incandescent Lamp	275	202
Cleaning Machines, Broom	18	866
Cleaning Machines, Carpet	25	868
Cleaning Machines, Grain	81	597
Clearing Stones, Leather	98	891
Cleating Machines	45	620
Cleats, Car Wiring	86	152
Porcelain or Clay	87	152
Climbers ..... See	106	157
Clippers, Bolt and Rivet	44	743
Stay-bolt	45	743
Clippers, Cattle Dehorning	5	567
Clipping Machines, Sheep, etc.	34	870
Clipping Machines, Veneer	456	714
Clipping Shears	575	843
Clock Switches	90	152
Clocks, Electric and Programme ..... See	336	223
Watchmen's ..... See	344	224
Clod Crushers	6	567
Closed Circuit Batteries	23	139

	Heading	Page
Cloth Brushing Machines ....See	18	493
Cloth Calendering Machines ....See	18	493
Cloth Case Smoothing Machines	8	465
Cloth Cutting Machines	14	492
Cloth Folding Machines	19	494
Cloth Slitting and Reeling Machines	58	502
Cloth Spongers	59	502
Cloth Stretchers	45B	499
Cloth Testing Machines	61	502
Cloth Turners	28	495
Clothes-Pin Machines	283	669
Clothes Tumblers, Laundry	95	890
Clothing, Card	73	504
Clover Bunchers	3	566
Clover Cutters	10	569
Clover Hullers	35	579
Clutch Shifting Mechanism	184	366
Clutches	180	365
Arc Lamp	92	153
Friction	181	365
Safety Three Part	182	366
Wood Split Pulley ....See	227	383
Coal and Ore Buckets	6	525
Coal and Ore Handling Machinery	20	529
Coal Screens	152	909
Coaling Chutes, Locomotive	60	448
Coating Machines, Pill	127	900
Cock Grinding Machines	151	762
Cocks, Gage	50	317
Coffee Grinding Mills	44	874
Coffee Machinery	35	870
Coil Chains	13	527
Coilers, Hoop	16	616
Coilers, Wire	626	851
Coils, Economy ....See	338	223
Heat ....See	260	200
Induction	182	177
Resistance	277	203
Ruhmkorff ....See	182	177
Spark	303	209
Coin Operated Vending Machines	188	921
Coining Machines ....See	516	830
Coining Presses	516	830
Cold Pressed Nut Machines	59	745
Cold Sawing Machines ....See	564	841
Collars	185	366
Plain Set	186	366
Safety Set	187	366
Collectors, Dust	62	880
Flour Mill	77	596
Collets	273	789
Color Grinders	125	900
Coloring Machines, Leather	97	891
Columns, Water, Plain	51	318
Water, Safety	52	319
Comber Needles	77	504
Combers	35	497
Combination Bevels	330	801

	Heading	Page
Combination Chucks ..... See	267	788
Combination Gages	374	807
Combination Gas and Electric Fixtures.....	144	169
Combination Squares	427	815
Combs, Circles and Fallers.....	76	504
Combs, Slasher	97	507
Come-Alongs ..... See	106	157
Commercial Motor Vehicles	114	894
Commutator Bars	97	153
Commutator Segments ..... See	97	153
Commutator Turning Tools	99	154
Commutators	98	154
Compound Engines	23	302
Corliss ..... See	23	302
Compound Feeders, Boiler	63	322
Compressed Air Locomotives.....	44	445
Compressing Machines, Spoke Tenon	237	662
Compression Couplings	192	368
Compressors, Air	243	387
Compressors, Pill	127	900
Computing Scales	149	908
Concave Circular Saws	133	634
Concealed Switch Boxes	47A	145
Concentrators, Ore	100	551
Concrete Machinery	36	871
Concrete Wall Machines	37	871
Condensation Pumps ..... See	304	408
Condensers, Ammonia	92	889
Condensers (Cotton Ginning Machinery).....	40	872
Condensers, Electric	100	154
Condensers, Steam	53	319
Condensers, Sugar	169	916
Conduits, Interior	101	155
Iron Armored ..... See	101	155
Underground	102	155
Cone Machines	3	739
Confectioners' Machinery	38	871
Connections and Terminals, Wire	103	156
Connectors, Trailer	104	156
Trolley-Wire Splicing	105	157
Construction Cars	26	440
Construction Equipment, Railway	57	448
Construction Tools, Linemen's	106	157
Controllers, Street Car, Crane, Automobile, etc.	107	157
Converters ..... See	338	223
Rotary ..... See	229	191
Conveyor Trippers.....	238	386
Conveyors, Apron ..... See	22	529
Belt	22	529
Cable	23	529
Chain	24	530
Link-Belt	25	530
Spiral or Screw	26	530
Conveyors, Log and Slab	175	645
Refuse	191	650
Saw Dust	193	650
Cookers, Starch	95	890
Cooking Apparatus, Electric	174	175

	Heading	Page
Cooking Machines, Canning House	23	867
Coolers, Beer	12	864
Coolers, Brine	92	889
Coolers, Candy	38	871
Coolers, Confectioners' Cream	38	871
Coolers, Lard	20	866
Coolers, Milk and Cream	46	875
Coolers, Paint	125	900
Coolers, Tobacco	183	920
Cooperage Machinery ..... See	1	615
Cop Tubes	78	504
Cop Winders	49	500
Coping Machines	471	824
Coping and Notching Machines	472	824
Coping, Punching, and Shearing Machines	553	839
Coping and Punching Machines	552	839
Copper Floats	67	323
Copper Melting Furnaces	77	885
Copper Plate Printing Presses	107	479
Copper Printing Rollers	79	504
Copper Wire, Bare	353	225
Coppers, Battery	110	158
Cord Adjusters	111	158
Cord, Flexible Insulated Lamp	112	159
Cord Wood Saw Benches	413	700
Cord Wood Saw Mills	206	655
Cordage ..... See	228	383
Cordage Machinery	2	490
Core Box Machines	284	670
Core Drills	104	551
Core Making Machines	72	747
Core Oven Cars	84	547
Core Ovens	73	747
Cores, Armature	14	138
Cork Branding Machines	9	862
Cork Extractors	9	862
Cork Grinding Mills	44	874
Corking Machines, Bottle	9	862
Corliss Engines	24	303
Compound ..... See	23	302
Corn Crushers	73	595
Corn Cutters	11	570
Corn Huskers and Shredders	37	580
Corn Planters	49	584
Corn Shellers	60	589
Corner Block Machines	285	670
Corning Mills, Gunpowder	87	888
Corrugating Machines, Metal	473	824
Corrugating Machines, Paper	63	473
Corrugating and Seaming Machines, Metal	474	824
Corset Cutting Blocks	39	872
Corset Machinery	39	872
Corset Steel Tipping Machines	39	872
Corundum Wheels	328	801
Cotton Belting	168	360
Cotton Cleaners	40	872
Cotton Elevators	40	872
Cotton Ginning Machinery	40	872

	Heading	Page
Cotton Gins	40	872
Cotton Looms	65	502
Cotton Machinery	13	492
Cotton Planters	50	585
Cotton Presses	134	903
Cotton Seed and Cotton Seed Oil Presses	135	904
Counterbores	274	789
Counters, Revolution	54	320
Tally	97	478
Countershafts	189	367
Machine Tool	275	790
Countersinking Machines	105	752
Countersinks	353	804
Counting Machines	41	873
Couplers, Car	See 37	443
Couplers and Draw Bars	37	443
Couplings	190	367
Clamp	191	368
Compression	192	368
Flanged or Plate	193	369
Friction	194	369
Jaw or Clutch	195	370
Sleeve	196	370
Spiral Jaw	197	371
Square Jaw	198	371
Universal Joint	199	371
Vise	200	372
Wedge	201	372
Couplings and Fittings, Air Brake	11	438
Covers and Cups, Oil Hole	276	790
Covering Machines, Button	21	867
Covering Machines, Pamphlet	9	465
Covering and Topping Machines, Paper Box	40	469
Crack-off Machines, Glass	84	887
Cracker Grinders, Bakers'	5	860
Crane Chains	14	527
Crane Controllers	107	157
Cranes, Air	See 36	532
Cantilever	28	530
Gantry	29	530
Hand	30	530
Hydraulic	31	531
Jib	32	531
Locomotive	33	532
Locomotive Electric	34	532
Pillar	35	532
Pneumatic	36	532
Portable	37	533
Swing	38	533
Traveling	39	533
Traveling Electric	40	534
Wrecking	41	534
Crank Pin Grinding Machines	152	762
Crank Presses	See 530	834
Crank Shaft Lathes	189	771
Crank Shapers	239	783
Crank and Fly-Wheel Vacuum Pumps	314	415
Cream Coolers, Confectioners'	38	871

	Heading	Page
Cream Ripeners	46	875
Cream Separators	46	875
Creamery Pumps	See 304	408
Creasing Machines, Paper Box	41	469
Creels	See 54	501
Crimpers, Blind Slat	286	670
Crimping Machines, Metal	475	824
Crocheting Machines	See 26	495
Crooke's Tubes	341	224
Cross Arms	113	159
Cross Connecting Boards	See 309	213
Cross Cut Saw Machines	See 424	705
Crossing Gates, Railway	61	448
Crozers, Barrel	4	615
Crucibles	75	747
Crushers and Breakers, Rock, etc	43	873
Crushers, Clod	6	567
Corn	73	595
Oil Mill	121	899
Ore	43	873
Pulp	64	473
Pulverizers, Soil	7	567
Rock	43	873
Stone	See 43	873
Crushing Machinery	42	873
Crutchers, Soap	160	914
Cultivators	8	568
Cupolas	76	747
Cups and Covers, Oil Hole	276	790
Cups, Grease	94	333
Grease, Automatic	95	333
Oil	96	333
Oil, Sight Feed	97	334
Cups, Porous	257	199
Porous, Battery	See 257	199
Curd Mills	46	875
Current, Voltage and Pressure Registers	270	202
Curriers' Machinery	97	891
Curriers' Machinery Accessories	98	891
Curtain Ring Machines	287	670
Curving Machines, Rule	105	479
Cut-Off Automatic Engines	20	299
Cut-Off Engines	See 20	299
Cut-Off and Equalizing Saws	251	664
Cut-Off and Gaining Machines, Car	277	668
Cut-Off Saw Benches	414	701
Cut-Off Saw Blades	See 132	633
Cut-Off Saw Machines	424	705
Cut-Off or Squaring Machines	239	662
Cut-Outs, Arc Light	115	160
Battery	116	160
Incandescent	117	160
Cut-Outs and Spring Jacks	See 324	218
Cut-Outs and Plugs, Telegraphic	See 324	218
Cutter Head Grinders	114	630
Cutter Heads, Sash	288	670
Shaper	444	712
Cutter and Reamer Grinding Machines	153	763

	Heading	Page
Cutters (Agricultural Machinery)		
Band	9	569
Clover	10	569
Corn	11	570
Feed	12	570
Hay	13	571
Potato	14	571
Root	15	571
Stalk	16	571
Cutters, Bark	99	892
Cutters, Brick	14	865
Cutters, Butter	46	875
Cutters, Buttercup	38	871
Cutters, Flat and Circular Rib	23	494
Cutters, Confectioners' Waffle	38	871
Cutters, Hurl	18	866
Cutters, Index	10	466
Cutters, Lead and Rule	98	478
Cutters, Lens	123	899
Cutters (Metalworking Machinery)		
Automatic Bolt	47	744
Bolt	46	743
Flue Sheet	277	790
Gear	141	760
Hand, Wire	628	851
Hoof	25	741
Milling	278	790
Pipe, Hand	502	828
Solder	597	847
Sprue	601	848
Stay-bolt	49	744
Track Bolt	50	744
Wire	627	851
Cutters, Paper	49	470
Automatic Ream	50	471
Card	51	471
Lever	See 49	470
Cutters, Paper Box Board	42	469
Scorers	43	470
Cutters, Rag	82	475
Cutters, Rotary Board	11	466
Cutters, Round Corner	12	466
Cutters, Tile	181	919
Cutters (Woodworking Machinery		
Carving Machine	See 115	630
Chair Back	70	624
Heading	6	615
Hoop	17	616
Lap	125	632
Lock	26	617
Moulding	368	687
Oval	288A	670
Plug	347	682
Saw Gummers'	148	638
Stave	30	618
Window Frame Pocket	289	670
Cutters and Bail Formers, Wire	629	851
Cutters and Shredders, Fodder	17	571

	Heading	Page
Cutting Blocks, Corset	39	872
Cutting Gages	314	676
Cutting Machines, Bakers'	5	860
Cutting Machines, Canning House	23	867
Cutting Machines, Cloth	14	492
Cutting Machines, Macaroni	102	892
Cutting Machines, Paper	49	470
Cutting Machines, Sewer Pipe	153	910
Cutting Machines, Slat	61	622
Cutting Machines, Sole	158	912
Cutting Machines, Veneer	457	714
Cutting and Folding Machines	24	495
Cutting and Milling Machines, Wire	630	851
Cutting and Punching Machines, Strap	88	889
Cutting and Threading Machines, Pipe	501	828
Cutting, Punching and Flaring Machines, Hoop	23	617
Cutting Off Lathes	190	771
Cutting Off Machine Chucks	261	787
Cutting Off Machines, Metal	106	753
Cutting Off Machines, Wood	78	625
Cutting Off Punches	541	837
Cutting Off Tools	303	796
Cutting Off, Tenoning and Rim Dressing Machines	238	662
Cylinder Boring Bars, Portable	See 94	750
Cylinder Boring Machines	93	750
Cylinder Forming Machines	482	825
Cylinder Machines	93	627
Cylinder Mills, Pebble	131	901
Cylinder Printing Presses	108	479
Cylinder Washing Machines	95	890
Cylinder and Fourdrinier Machines	65	473
Cylinders and Frames, Soldering	599	848
Cylinders, Spinning	99	507
Cylindrical Gages	375	807
Dado and Saw Machines	439	710
Dado or Gaining Heads	See 50	620
Dairy Machinery	46	875
Damper Regulators	120	340
Dampeners (Laundry Machinery)	95	890
Dandy Rolls	72	474
Daniels' Planers	381	691
Deck Engines	See 30	307
Decorating Whirlers, Pottery	131	901
Decks, Center	See 177	645
Log	177	645
Deep Well Engines	See 252	390
Deep Well Pumps	252	390
Defecators, Sugar	169	916
Degerminators	74	595
Dehorning Clippers	5	567
Dental Appliances	47	876
Electric	131A	166
Dental Engines	47	876
Depositors, Fancy Cake	5	860
Depositors, Marshmallow	38	871
Depth Gages	376	807
Depth and Bevel Gages	377	808
Derailing Devices	62	449

	Heading	Page
Derrick Engines...See	30	307
Derricks	42	534
Desk Lights	214	186
Detectors, Ground...See	226	190
Diamond Drills...See	104	551
Diamond Tools	304	796
Hand	354	805
Diaphragm Hand Pumps	280	398
Diaphragms, Car	15	438
Diaphragms, Carbon	77	151
Die Heads, Pipe	279	791
Die Holders	286	792
Die Reaming Lathes	191	771
Die Presses	20	467
Die Presses, Soap	160	914
Die Slotting Machines	247	785
Dies		
Bolt	51	744
Hand, Pipe	355	805
Pipe	279	791
Differential Chain Blocks	2	524
Differential Pulley Block Chains	15	528
Diggers, Beet	18	572
Post Hole	19	572
Potato	20	572
Dimension Gages	316	676
Dimension Planers	382	691
Dimension Saw Machines	425	706
Dimmers, Theatre...See	282	204
Dinkers, Shoe	159	913
Dipping Machines, Fur	81	886
Dipping Machines, Tobacco	183	920
Direct Acting Pumps...See	304	408
Direct Current Arc Lamps	206	183
Direct Current Arc Lighting Dynamos	127	162
Direct Current Electro-Plating Dynamos	129	165
Direct Current Incandescent Lighting and Power Dynamos	128	163
Direct Current Motors, Electric	234	192
Direct Running Saw Mills	207	655
Dish Washing Machines	48	876
Disk Drills...See	136	758
Agricultural	23	574
Disk Fans, Direct Motor Connected	138	167
Disk Grinding Machines	154	763
Disk Harrows	30	576
Disk Wheels, Hand...See	408	698
Disks, Armature	15	139
Disks, Reference	356	805
Dissolvers, Pigment	125	900
Distillery Pumps...See	304	408
Distilling Apparatus	49	876
Fresh Water	50	876
Turpentine	51	877
Distributors, Fertilizer	21	572
District Telegraph Apparatus	121	161
District Telegraph Call Boxes...See	121	161
Ditching Machines	56	878
Ditching Scrapers	143	906

	Heading	Page
Divers' Helmets	52	877
Dividers, Dough	5	860
Dividers		
Extension	357	805
Yankee Spring	358	805
Dividers, Powder	127	900
Dividers and Calipers	333	802
Diving Apparatus	52	877
Dogs, Lathe	280	791
Dogs, Saw Mill	209	657
Door Clamps	280	669
Door, Blind and Sash Machinery	409	699
Door and Sash Polishing Machines	See 408	698
Door Openers, Electric	122	162
Door Surfacing and Polishing Machines	446	712
Door Switches, Automatic	312	214
Doors, Car	16	439
Doors, Grain	See 16	439
Double Action Cam Presses	515	830
Double Angle Shears	576	843
Double Arm Iron Pulleys	217	378
Double Band Saw Machines	426	706
Double Edgers	297	672
Double End Tenoning Machines	450	713
Double Head Drills	119	755
Double Revolving Rip-Saw Machines	398	695
Double Seaming Machines, Sheet Metal	566	842
Double Spindle Lathes	192	771
Double Surface Planers	See 379	690
Doubling Shears, Tin Plate	577	843
Dough Cutting Machines	5	860
Dough Dividers	5	860
Dough Mixers	5	860
Dovetailing Bits	See 115	630
Dovetailing Machines	293	671
Dowel, Rod and Pin Machines	405	697
Doweling and Jointing Machines	328	679
Draft Gages	69	324
Draft Gear and Draw Bar Attachments	38	443
Drag Saw Blades	136	635
Drag Saw Machines	See 202	653
Drag Saw Mills	202	653
Drag Scrapers, Road	143	906
Draughtsmen's T Squares	428	815
Draughtsmen's Tools	53	877
Draw Bars and Couplers	37	443
Draw Benches, Wire	631	851
Draw Chucks	262	787
Draw Cut Shapers	240	783
Draw Frames	36	497
Hemp Fibre	See 7	491
Drawing Boards, Draughtsmen's	53	877
Drawing Machines, Brush	19	866
Drawing Machines, Wire	See 631	851
Drawing Presses	518	831
Dredge Chains	16	528
Dredging Pumps	See 304	408
Dredging and Excavating Buckets	7	525

	Heading	Page
Dredging and Excavating Machinery	55	877
Dressers, Emery Wheel	327	800
Dressers, Flour	75	595
Dressers, Graders and Scalpers, Flour	96	601
Dressers, Stave	See 29	618
Dressing, Belt	175	363
Dressing Machines, Box	46	620
Drier Cars	85	547
Driers, Grain	76	596
Driers, Lard	20	866
Driers, Lumber	See 59	879
Driers, Rotary	58	878
Driers, Tobacco	183	920
Drill Bits, Machine	294	671
Drill Chucks	263	787
Drill Chucks, Hand	See 263	787
Drill Gages	378	808
Drill Grinding Machines	155	763
Drill Holders	287	792
Drill Presses	See 107	753
Drill Sockets	421	814
Drill Vises	317	798
Drilling Lathes	193	771
Drills, Agricultural	22	573
Disk	23	574
Hoe	24	574
Runner Press	25	574
Shoe	26	575
Drills, Lens	123	899
Drills, Metalworking	107	753
Arch Bar	108	753
Bench	109	753
Bicycle	110	753
Blacksmiths'	111	754
Block	112	754
Boiler Shell	113	754
Bridge	115	754
Car Buffer	116	754
Chain	360	805
Clamp	117	754
Disk	See 136	758
Double Head	119	755
Electric Duplex Boiler Shell	114	754
Electric Portable	130	757
Friction	See 136	758
Gang	121	755
Gun Barrel	122	755
Hand	359	805
Heater	123	755
Horizontal	124	755
Lever	See 140	759
Locomotive Frame	126	756
Multiple Spindle	127	756
Overhead Traveling	128	757
Pneumatic, Portable	131	757
Portable	129	757
Post	132	757
Radial	133	758

	Heading	Page
Drills, Metalworking, continued.		
Rail	134	758
Ratchet	135	758
Ratchet, Hand	361	806
Sensitive	136	758
Suspension	137	759
Swing	138	759
Track	362	806
Turret	139	759
Twist	281	791
Upright	140	759
Vertical	See 140	759
Drills, Mining	103	551
Core	104	551
Diamond	See 104	551
Electric	106	551
Hand	107	551
Pneumatic	108	551
Prospecting	See 104	551
Steam	110	552
Drills, Paper	33	468
Drills, Stoneworking	See 103	551
Drip Pumps	See 304	408
Drivers, Hoop	97	627
Thin Hoop	5	615
Driving Chains	202	372
Driving Machines, Pile	130	901
Driving Wheel Lathes	194	771
Drop Hammers	489	826
Drop Hangers	210	375
Drop Presses	519	831
Drops, Annunciator and Telephone	See 309	213
Drug Chasers	127	900
Drug Mills	127	900
Drums, Hoisting	43	535
Drums, Tapestry Printing	103	507
Drums, Winding	241	387
Dry Batteries, Open Circuit	26	141
Dry Grinding Pans	115	552
Dry Kilns	See 59	879
Dry Paint Grinders	125	900
Dry Pans (Clayworking Machinery)	32	869
Dry Press Brick Machinery	15	865
Drying Apparatus	58	878
Drying and Saturating Machines, Paper	80	475
Drying Machinery, Textile	15	492
Hydro-Extractors	16	493
Drying Machines, Pulp	66	473
Drying Machines, Veneer	458	714
Dump Cars	27	440
Dump Tables, Brick	14	865
Dumping Grates	81	329
Duplex Boiler Shell Drills, Electric	114	754
Duplex Fly-Wheel Vacuum Pumps	316	415
Duplex Power Pumps	300	406
Duplex Steam Pumps	305	411
Duplex Vacuum Pumps	315	415
Duplex Vertical Plunger Pattern Marine Pumps	290	400

	Heading	Page
Duplex and Quadruplex Telegraph Apparatus...See	324	218
Duplex and Single Actuated Vacuum Pumps...	317	415
Duplicating Machines, Latch Key...	177	768
Duplicating Machines, Manuscript...	60	880
Dust Collectors...	62	880
Dust Collectors, Flour Mill...	77	596
Dust Guards...	39	444
Dust and Shavings Fans...See	65	881
Dusters, Bran...	78	596
Fur ...	81	886
Rag ...	67	474
Dusting-off Machines, Leather...	97	891
Dye House Cans...See	94	506
Dye Sticks ...	81	505
Dyeing Machinery...	17	493
Dynamo Armatures...	13	138
Dynamometers, Electric...See	333	222
Dynamos ...	125	162
Alternating Current...	126	162
Direct Current, Arc Lighting...	127	162
Direct Current, Incandescent Lighting and Power...	128	163
Direct Current, Electro Plating...	129	165
Earth Augers ...	193	923
Economizers, Fuel...	55	320
Steam ...	56	320
Economy Coils...See	338	223
Edge Grinding Machines...See	158	763
Edge Moulding and Shaping Machines...	372	688
Edger Saw Blades...See	132	633
Edgers, Woodworking...	296	671
Double ...	297	672
Gang ...	298	672
Lumber ...See	298	672
Edges, Adjustable Metal...See	414	813
Bevel Straight...	364	806
Steel Straight...See	414	813
Edging Grinders...	299	673
Edging Saw Machines...	428	707
Edging Tables...	300	673
Edging and Slitting Tables...	301	674
Egg and Icing Beaters, Bakers'...	5	860
Ejectors ...	57	320
Elbow Edging Machines, Stovepipe...	612	849
Electric Automobiles...	117	895
Electric Bells...	35	144
Electric Blasting Apparatus...	39	144
Electric Blue Print Machines...See	54	877
Electric Car Heating Apparatus...	175	176
Electric Car Lighting Apparatus...	79	151
Electric Car Trucks...	53	447
Electric Chandeliers...See	144	169
Electric Clocks...See	336	223
Electric Condensers...	100	154
Electric Cooking Apparatus...	174	175
Electric Door Openers...	122	162
Electric Drills...	106	551
Electric Duplex Boiler Shell Drills...	114	754
Electric Portable Drills...	130	757

	Heading	Page
Electric Dynamometers...See	333	222
Electric Fans...	135	166
Electric Foot Warmers...See	174	175
Electric Gas-Lighting Burners...See	157	172
Electric Heating and Cooking Apparatus...	174	175
Electric Hoists...	53	538
Electric Illuminated Signs...	296	207
Electric Lanterns...	212	186
Electric Launches...	213	186
Electric Locks... See	122	162
Electric Locomotive Cranes...	34	532
Electric Locomotives...	45	445
Mine ...	228	190
Electric Mining Drills...	106	551
Electric Motors...	230	191
Electric Pendants...See	144	169
Electric Portable Lanterns...	212	186
Electric Pumps...	271	394
Electric Service Boxes...See	101	155
Electric Signs...	296	207
Electric Smoothing Irons...See	174	175
Electric Soldering Furnaces...	78	885
Electric Soldering Irons...See	174	175
Electric Switches...	310	214
Electric Tabulators...	322	218
Electric Telpherage Systems...	331	222
Electric Time Systems...	336	223
Electric Traveling Cranes...	40	534
Electric Welding Machines...	348	225
Electric Wire Covering Machinery...See	187	179
Electric and Combination Fixtures...	144	169
Electrical Apparatus ...		137
Electrical Springs...	298	208
Electrical Tell-Tale Floats...See	146	171
Electrical Vacuum Tubes...See	341	224
Electroliers ...See	144	169
Electro-Dental Apparatus...	131A	166
Electro-Magnets ...	223	189
Electro-Mechanical Bells...See	164	173
Electro-Mechanical Gongs...	164	173
Electro-Plating Apparatus...See	129	165
Electro-Plating Batteries...	24	140
Electrotyping and Stereotyping Machinery...	89	477
Stereotype Plate Machines...	90	477
Elevator Boots...	4	525
Elevator Buckets...	8	526
Elevator Pumps...	272	395
Elevators ...	44	536
Barrel and Package...	45	536
Bucket ...	46	536
Foundry ...	47	536
Freight and Passenger...	48	536
Hod ...	49	537
Hydraulic ...See	48	536
Plunger ...See	48	536
Water ...See	46	536
Eliminators ...See	128	342

	Heading	Page
Embossing Machines, Leather	97	891
Wood	80	625
Embossing Presses, Bookbinders'	21	467
Metal	520	831
Printers'	109	479
Emery, Corundum and Carborundum Wheels	328	801
Emery Jointers	477	824
Emery Wheel Dressers	327	800
Emery Wheels	328	801
Emulsifiers	127	900
End Grinding Machines	157	764
End Measuring Rods	366	806
Ending Machines, Paper Box	44	470
Engine Lathes	See 212	774
Engine Stops	130	343
Engines, Dental	47	876
Engines	17	299
Agricultural	See 36	311
Artesian and Deep Well	See 252	390
Automatic, Cut-Off	20	299
Blowing	22	301
Compound	23	302
Compound Corliss	See 23	302
Corliss	24	303
Cut-Off	See 20	299
Deck	See 30	307
Derrick	See 30	307
Gas and Gasoline	29	304
High Speed, Automatic	21	300
Hoisting	30	307
Hydraulic	31	309
Locomotive	32	309
Marine	33	309
Oil	35	311
Portable	36	311
Pumping	244	389
Pumping, Hot Air	245	389
Reversing	See 30	307
Rolling Mill	39	313
Steering	See 34	310
Steering, Marine	34	310
Throttling	41	313
Traction	42	314
Triple Expansion	43	315
Turbine	43A	315
Vertical	44	315
Engineering Instruments	See 151	908
Engineers' and Plumbers' Levels	402	811
Engraving Blocks	367	806
Engraving Machines, Plate	91	477
Envelope Machines	See 20	467
Envelope Sealing Machines	63	881
Equalizers, Bolt	2	615
Stave	32	618
Escalators	51	537
Evaporators, Sugar	169	916
Excavating Buckets	7	525
Excavating and Dredging Machinery	55	877

	Heading	Page
Excelsior Machinery	302	674
Exciters	See 126	162
Exhaust Fans	65	881
Exhaust Heads	59	321
Expanders, Boiler Tube	60	322
Expanding Chucks	264	788
Expanding Machines, Hub Band	240	663
Extension Beam Trammels	446	820
Extension Bells	See 222	188
Extension Dividers	357	805
Extension Lathes	196	771
Extractors, Cork	9	862
Extractors, Grease	61	322
Extractors, Oil	283	792
Extractors, Paint	125	900
Eyeletting Machines	64	881
Cloth	25	495
Paper	14	466
Fabric Pin Ticket Machines	See 88	505
Face Grinding Machines	158	764
Face-Plates and Jaws	284	792
Facing Lathes	197	772
Facing Machines, Nut	52	745
Facing Machines, Valve Seat	126	342
Facing Machines, Spoke	241	663
Wheel	242	663
Factory Sewing Machines	155	911
Factory Trucks	75	544
Fallers, Circles, and Combs	76	504
Fan Blowers	8	861
Fan Motors, Electric	See 135	166
Fancy Cake Depositors	5	860
Fanning Mills	82	598
Fans, Exhaust, Ventilating, etc.	65	881
Fans, Battery-Motor, Electric	135	166
Ceiling, Alternating Current	136	166
Ceiling, Direct Current	137	167
Disk, Direct Motor Connected	138	167
Portable, Alternating Current	139	167
Portable, Direct Current	140	168
Fare Registers	49	446
Farriers' Tools	See 21	741
Fasteners, Belt	176	363
Fasteners, Box	47	620
Box Shook	48	620
Fastenings, Rail	68	450
Fearnaughts	See 54	501
Feed Cutters	12	570
Feed Governors	79	597
Feed Water Circulators	46B	316
Feed Water Filters	65	323
Feed Water Heaters	85	330
Feed Water Purifiers	117	339
Feed Water Regulators	121	340
Feeders, Boiler	62	322
Boiler Compound	63	322
Boiler Oil	64	323
Feeders, Fuel	166	641

	Heading	Page
Feeders, Gin	40	872
Feeders, Grinding Mill	80	597
Feeders, Opener or Lapper	37	497
Feeders, Ore	113	552
Feeders, Paper	55	471
Feeders, Thresher	27	575
Feeds, Steam Carriage	224	661
Felloe Machines	243	663
Fenders, Car	17	439
Fermenting Tubs, Brewers'	12	864
Fertilizer Distributors	21	572
Fertilizer Machinery	66	882
Fibre Machines	4A	490
Fibrous Packing	99	334
Fiddling Stones (Leather Working Machinery)	98	891
Field Rheostats	280	203
File Sharpening Machines	368	806
Filers, Band Saw	107	628
Files	369	806
Files, Side	157	640
Filing Machines, Metal	478	824
Saw	479	824
Filing Clamps, Saw	143	637
Filing and Setting Frames, Band Saw	108	629
Filing and Setting Machines, Saw	440	711
Fillers, Capsule	127	900
Filling Machines, Bottle	9	862
Filling Machines, Can	23	867
Filter Press Pumps	See 304	408
Filter Presses	136	904
Filters, Beer	12	864
Feed Water	65	323
Oil	66	323
Water	67	882
Finisher or Ribbon Lap Machines	39	498
Finishing and Polishing Machines, Wheel	247	663
Finishing Machinery, Textile	18	493
Finishing and Sewing Machines, Knit Goods	26	495
Fire Alarm Signal Systems, Manual	291	205
Fire Alarm Signal Systems, Thermostatic	292	206
Fire Apparatus	69	883
Fire Pumps	See 304	408
Marine	291	400
Firm Joint Calipers	335	802
Fish Plate Notching Machines	499	828
Fish Plate Punches	542	837
Fitting Machines, Axle Cap	231	662
Saw	416	702
Fittings, Air Brake	See 11	438
Car Door	16	439
Fittings, Pipe	110	337
Brass	111	337
Cast Iron	112	338
Malleable Iron	113	339
Fittings, Pipe Railing	114	339
Fittings, Straddle	See 110	337
Fixture Brackets, Electrical	See 144	169
Fixture or Chandelier Switches	313	214

	Heading	Page
Fixtures, Electric and Combination	144	169
Fixtures and Hoods, Street Lamp	143	168
Flange Pulleys	218	378
Flanged Couplings	193	369
Flangers, Saw	144	637
Flangers and Snow Plows	75	451
Flanging Machines	480	824
Flanging and Beading Machines	457	822
Flaring, Cutting and Punching Machines, Hoop	23	617
Flaring Machines, Hoop	18	617
Flasks, Foundry	77	748
Flat and Circular Rib Cutters	23	494
Flax Seed Machinery	70	884
Fleshing Machines (Tanners' Machinery)	99	892
Flexible Cord, Electric	See 112	159
Flexible Joints	12	438
Flexible Roller and Anti-Friction Bearings	See 255	786
Flexible Shaft Grinding Machines	159	764
Flexible Shafting	230	384
Float Valves	144	349
Floats, Copper	67	323
Floats, High and Low Water Electric	146	171
Tell-Tale Electrical	See 146	171
Floor Buttons or Treads	See 261	200
Floor Board Boring, Marking and Measuring Machines	305	674
Floor Boring Machines	266	666
Floor Grinding Machines	160	764
Floor Stands	234	385
Flooring Butting Machines	307	675
Flooring and Ceiling Gages	315	676
Flooring End Matching Machines	308	675
Flooring Machines	309	675
Flour Dressers	75	595
Flour Mill Machinery	71	594
Flour Sifters, Bakers'	5	860
Flower Pot Machinery	131	901
Flue Boilers	2	274
Return Flue	See 2	274
Two Flue	See 2	274
Flue Scrapers	See 49	317
Flue Sheet Cutters	277	790
Flue Welding Machines	158	356
Flue or Tube Calipers	46A	316
Flue or Tube Cleaners	49	317
Flush, Push Button or Snap Switches	314	214
Fluted Rolls	82	505
Fluting and Plaiting Machines	157	912
Fly Net Machinery	71	884
Fly Wheel Pulleys	219	379
Fly Wheels	203	372
Fodder Cutters and Shredders	17	571
Folders, Paper	56	472
Folding Box Machinery	See 37	469
Folding Machines, Cloth	19	494
Lock	See 481	825
Metal	481	825
Rubber Belt	144	906
Folding and Cutting Machines, Cloth	24	495

	Heading	Page
Folding and Seaming Presses	521	832
Foot Bellows	7	861
Foot Lathes	198	772
Foot Power Hammers	490	826
Foot and Hand Power Saw Machines	431	707
Foot Power Band Saw Machines	429	707
Foot Power Circular Saw Machines	430	707
Foot Power Formers	311	675
Foot Power Mortising Machines	361	686
Foot Power Shapers	443	712
Foot Power Wood Turning Lathes	334	679
Foot Power Woodworking Machinery	310	675
Foot Presses	522	832
Lever	528	833
Foot Valves	145	349
Foot Warmers, Electric	See 174	175
Foot Wheels	370	807
Force Feed Lubricators, Mechanical	93	332
Force Pumps	See 299	403
Forcing Presses	523	832
Forge Blowers	8	861
Forges	72	884
Portable	73	884
Forging Machines, Bolt	54	745
Forging Presses	524	832
Forks, Shifter	232	384
Forks, Trolley	150	171
Formers	633	852
Bail Cutters and Formers	629	851
Wire	633	852
Wire Bail	634	852
Wire Ring	See 660	855
Formers, Foot Power	311	675
Forming Lathes	See 186	770
Forming Machines, Metal		
Cylinder	482	825
Hub	7	739
Tube	617	850
Forming and Bending Machines	483	825
Forming and Drilling Machines, Hub	7	739
Forming and Laying Machines, Hemp Fibre	5	490
Forming and Punching Machines	554	839
Forming Tools	305	796
Forms, Setting Up	28	618
Foundry Bellows	7	861
Foundry Cars	86	548
Foundry Elevators	47	536
Foundry Equipment	69	747
Foundry Flasks	77	748
Foundry Trucks	73	543
Fourdrinier Machines	65	473
Fourdrinier Wires	73	475
Fox Lathes	See 186	770
Fox Monitor Lathes	See 186	770
Frame Machines	81	625
Frames, Band Saw Brazing	105	628
Frames, Band Saw Setting and Filing	108	629
Frames, Draw	36	497

	Heading	Page
Frames, Grindstone	176	768
Frames, Roving	43	498
Frames, Spinning	44	498
Frames, Wire Rod	646	854
Frames or Boxes, Wall	204	372
Frames and Cylinders, Soldering	599	848
Frames or Heads, Grinder	173	767
Framing Machines, Mining Timber	189	649
Shoe Box	49	620
Freight Car Seals ..See	22	440
Freight Cars	28	441
Freight Elevators	48	536
Fresh Water Distilling Apparatus	50	876
Friction Clutch Pulleys	220	379
Friction Clutches	181	365
Friction Couplings	194	369
Friction Drills ..See	136	758
Friction Shapers	241	783
Frictional Machines..See	306	210
Frogs, Replacing	64	449
Frogs, Wrecking ..See	63	449
Frogs and Crossings	63	449
Fruit Grinding Machines	29	576
Fruit Paring Machines	47	584
Fruit Presses	137	904
Fuel Economizers	55	320
Fuel Feeders	166	641
Fulling Mills ..See	18	493
Fur Cutters	81	886
Fur Formers	81	886
Furnace Grates ..See	81	329
Furnaces	74	885
Furnaces, Annealing	75	885
Furnaces, Blast	76	885
Furnaces, Brass Melting	77	885
Furnaces, Calsing	80	886
Furnaces, Copper Melting	77	885
Furnaces, Electric Soldering	78	885
Furnaces, Melting	77	885
Furnaces, Plumbers' and Tinners'	79	885
Furnaces, Smelting	80	886
Furniture, Machine Shop	285	792
Furriers' Machinery and Tools	81	886
Fuse Blocks ..See	117	160
Fuse Holders ..See	153	171
Fuse Links ..See	354	226
Fuse Wire and Links	354	226
Fuses and Fuse Holders	153	171
Fusees ..See	79	452
Gage Cocks	50	317
Gage Glasses	76	327
Gage Lathes	335	680
Gages, Battery, Electrical	158	172
Wire	350	225
Gages, Metalworking		
Bevel	371	807
Caliper	372	807
Center	373	807

	Heading	Page
Gages, Metalworking, continued.		
Combination Center, Depth, Angle and Twist Drill..	374	807
Cylindrical	375	807
Depth	376	807
Depth and Bevel	377	808
Drill	378	808
Height	379	808
Inspectors'	380	808
Iron Plane	381	808
Limit	382	808
Micrometer	383	808
Micrometer Caliper	384	808
Rolling Mill	385	809
Scratch	386	809
Screw Pitch	387	809
Screw Thread	388	809
Splining or Keyseat	389	809
Stair	390	809
Surface	391	809
Wire	638	852
Worm Thread Tool	392	809
Gages (Steam Specialties)	68	324
Draft	69	324
Mercury	70	324
Pressure Recording	71	324
Steam	72	325
Vacuum	73	325
Water	74	325
Gages, Track and Tie Plate	89	454
Gages, Woodworking	313	676
Ceiling and Flooring	315	676
Cutting	314	676
Dimension	316	676
Saw	317	676
Saw Set	150	639
Timber	318	677
Gainers, Chair Back	71	624
Gaining Machines, Axle	232	662
Car	277	668
Timber	227	661
Gallows or Guide Pulleys	221	380
Galvanized Iron and Steel Wire	359	228
Galvanizing Machinery	636	852
Galvanometers	See 333	222
Gang Boring Machines	See 269	667
Gang Drills	121	755
Gang Edgers	298	672
Gang Rippers	395	695
Gang Rip-Saw Machines	399	696
Gang Saw Blades	138	635
Gang Saw Mills	203	654
Gang or Multiple Punches	543	837
Gang or Multiple Slitting Machines	595	847
Gantry Cranes	29	530
Gap Lathes	202	772
Gap Shears	578	844
Garbage Driers	58	878

	Heading	Page
Garden Implements	39	581
Garnett Machines ..... See	18	.493
Gas Blast Furnaces ..... See	74	885
Gas Engine Igniters	180	176
Gas Engines	29	304
Gas Heaters	394	810
Gas Lighting Apparatus	157	172
Gas Mantle Knitting Machines	30	496
Gas Mantle Machinery	82	886
Gas Meters	108	893
Gas Motors ..... See	29	304
Gas Producers and Gas Works Machinery	83	886
Gaskets	75	326
Gasoline Apparatus	485	825
Gasoline Automobiles	118	896
Gasoline Engines	29	304
Gasoline Motors ..... See	29	304
Gate Hook Machines, Automatic	637	852
Gate Shears	579	844
Gate Valves	146	350
Gates, Car	18	439
Gates, Railway Crossing	61	448
Gatherers, Clay	33	870
Gear Cutting Machines	141	760
Gear Shapers	242	783
Gear Tooth Calipers	336	802
Geared Nut Tappers	64	746
Geared Pumps ..... See	299	403
Geared Shapers	243	784
Gears	205	373
Worm Wheel	206	374
Geissler Tubes	341	224
Generators, Electric ..... See	125	162
Motor	229	191
Thermo-Electric	161	172
Gilding Presses	22	467
Gin Feeders	40	872
Glass Insulators	190	179
Glass Works Machinery	84	887
Glasses, Gage	76	327
Glaze Barrels (Gunpowder Machinery)	87	888
Glaze and Color Grinders	131	901
Globe Valves	147	351
Globes, Arc Light	162	172
Globes, Shades, etc.	163	173
Glove Machinery	85	888
Glue Heaters	319	677
Glue Jointers	320	677
Glue Spreading Machines	321	677
Glue Testing Apparatus	322	677
Gluing Machines, Paper Box	45	470
Gluing and Pasting Machines	15	466
Glycerine Machinery	86	888
Golf Club Turning Lathes	336	680
Gongs, Electro-Mechanical	164	173
Street Car	165	174
Unmounted	166	174

	Heading	Page
Governors		
Feed	79	597
Pump	77	327
Steam Engine	78	328
Water Wheel	79	328
Graders, Coffee	35	870
Graders, Rice	142	905
Graders, Road	143	906
Graders, Scalpers, and Dressers	96	601
Graders and Spreaders, Ballast	66	449
Graduating Machines	142	761
Grain Cleaning Machines	81	597
Grain Doors ..See	16	439
Grain Driers	76	596
Grain Hullers	83	598
Grain Polishing Machines	92	600
Grain Registers	94A	601
Grain Samplers	95	601
Grain Separators ..See	81	597
Grain Testers ..See	95	601
Graining Boards, Leather	98	891
Granulators	88	599
Granulators, Sugar	169	916
Granulators, Tobacco	183	920
Graphite Brushes	56	146
Grate Bars	80	328
Grates, Dumping	81	329
Oblong and Circular	82	329
Rocking ..See	84	329
Shaking	84	329
Gravel Screens	152	909
Gravity Batteries ..See	23	139
Grease Cups	94	333
Automatic	95	333
Grease Extractors	61	322
Grinder Heads or Frames	173	767
Grinders, Card	74	504
Grinders, Sand	14	865
Grinders, Wood	68	474
Grinders, Woodworking Machinery		
Band Saw Wheel	110	629
Cutter Head	114	630
Edging	299	673
Lap	126	632
Planer Knife	323	677
Shingle Saw	145A	637
Grinding Machines	143	761
Automatic	144	761
Bench	145	761
Calender Roll ..See	166	765
Car Box	146	761
Car Brass	147	762
Car Wheel	148	762
Center	149	762
Chaser	150	762
Cock	151	762
Crank Pin	152	762
Cutter and Reamer	153	763

	Heading	Page
Grinding Machines, continued.		
Disk	154	763
Drill	155	763
Edge	See 158	764
End	157	764
Face	158	764
Flexible Shaft	159	764
Floor	160	764
Internal	See 172	767
Knife	162	764
Lawn Mower	163	765
Plain	164	765
Plow Share	165	765
Roll	166	765
Saw	167	765
Stove Plate	168	765
Surface	169	765
Swing Frame	170	766
Tool	171	766
Universal	172	767
Grinding Machines, Fruit	29	576
Grinding Mill Feeders	80	597
Grinding Mills	44	874
Grinding Mills, Agricultural	44	582
Grinding Mills, Flour Mill	84	598
Grinding Pans, Wet and Dry	115	552
Grindstone Frames	176	768
Grindstone Truing Device	174	767
Grindstones	175	767
Grip Hoists	54	538
Grip Sockets	422	814
Grooved Pulleys	222	380
Grooving Machines	486	825
Grooving Machines, Box	50	620
Chair	82	625
Grooving Machines, Stone	166	915
Grooving and Tonguing Knives	See 116	630
Grooving and Tonguing Machines	See 387	692
Grouting Pumps	See 278	396
Ground Detectors	See 226	190
Guard Boards, Jordan Engine	75	475
Guards, Cattle	59	448
Guards, Dust	39	444
Guards, Lamp	203	182
Wire	351	225
Wire, Lamp	See 203	182
Guards, Saw	146	637
Guards and Gates, Car	18	439
Guides, Saw	194	651
Guillotine Shears	See 579	844
Gum Packing	99	334
Gummers, Saw	147	637
Gun Barrel Drills	122	755
Gun Barrel Polishing Machines	466	823
Gun Lathes	203	772
Gunpowder Machinery	87	888
Hack Saw Blades	416	813

	Heading	Page
Hack Saws, Hand	417	813
Power	418	813
Hair Belting	170	360
Hairing Knives, Tanners'	100	892
Ham Branding Machines	20	866
Ham Stuffers	20	866
Hammers	487	825
Blacksmiths' Hand	28	741
Bumping or Horning	488	825
Drop	486	826
Foot Power	490	826
Lever Trip	491	826
Machinists' Hand	393	810
Pneumatic	492	826
Power	493	826
Spring	494	827
Steam	495	827
Hammers, Saw	149	638
Hand Bellows	7	861
Hand Blowers	8	861
Hand Bolt Cutters	48	744
Hand Cars	See 29	441
Hand Cranes	30	530
Hand Disk Wheels	See 408	698
Hand Drills	359	805
Mining	107	551
Hand Hack Saws	417	813
Hand Hammers	393	810
Hand Hoists	55	539
Hand Hole or Thumb Machines, Automatic	64	623
Hand Lathes	See 216	775
Hand Milling Machines	224	779
Hand Pipe Cutters	502	828
Hand Pipe Dies	355	805
Hand Pumps	278	396
Beer and Ale	279	397
Diaphragm	280	398
Painters' Oil	281	398
Porcelain Lined	282	398
Syphon	283	398
Wooden	284	398
Hand Punches	544	837
Hand Reamers	410	812
Hand and Foot Power Saw Machines	431	707
Hand Shears	581	844
Hand Taps	437	817
Hand Tenoning Machines	451	713
Hand Wire Cutters	628	851
Handle Borers, Snag	94	627
Handle Lathes	337	680
Handle Machines, Wire	639	852
Handle Throaters	See 337	680
Handle Turners	95	627
Hangers, Arc Lamp	171	174
Cable	172	175
Hangers (Power Transmission Appliances)	207	374
Ball and Socket, Adjustable	208	374
Bracket	See 166	359

	Heading	Page
Hangers, continued.		
Drop	210	375
Head Shaft	211	376
Post	212	376
Harness Machinery	88	889
Harness and Reeds, Loom	92	506
Harness Riveting Machines	88	889
Harrows, Disk and Tooth	30	576
Harvesters	31	577
Broom Corn	32	578
Hat Blocks	90	889
Hat Brim Irons	90	889
Hat Machinery	89	889
Hat Molds	90	889
Hauls, Log	178	645
Hay Carriers	4	567
Hay Cutters	13	571
Hay Loaders	42	581
Head Blocks, Saw Mill	210	657
Head Milling Machines	57	745
Head Shaft Hangers	211	376
Headers	33	578
Heading Cutters	6	615
Heading Jointers	7	615
Heading Machines, Bolt	55	745
Nipple	11	740
Heading Machines, Picket	376	689
Heading Packers	8	615
Heading Planers	9	615
Heading Rounders	10	616
Heading Saws	11	616
Heading Turners	12	616
Automatic	96	627
Heading-Up Machines and Devices	13	616
Heading, Upsetting and Forging Machines	56	745
Headlights	41	444
Heads, Dado	See 50	620
Jointer	327	678
Matcher	355	684
Shaper Cutter	444	712
Heads, Exhaust	59	321
Heads, Railway	42	498
Heads or Frames, Grinder	173	767
Heat Coils	See 260	200
Heater Drills	123	755
Heaters		
Barrel	14	616
Electric Car	See 175	176
Feed Water	85	330
Gas or Oil	394	810
Glue	319	677
Milk	46	875
Paint	125	900
Heating and Cooking Apparatus, Electric	174	175
Heating and Lighting Apparatus, Car	19	439
Heating Machines	5	739
Heddles	83	505
Height Gages	379	808

	Heading	Page
Hermaphrodite Calipers	337	802
Helmets, Divers'	52	877
High Duty Centrifugal Pumps	258	392
High Speed Automatic Engines	21	300
High Voltage Switches	315	215
High and Low Water Floats, Electric	146	171
Hinging Machines, Box	51	620
Hob Taps	438	817
Hod Elevators	49	537
Hoe Drills	24	574
Hoist Chains	17	528
Hoist Controllers	107	157
Hoisting Drums	43	535
Hoisting Engines	30	307
Hoists, Chain	52	538
Electric	53	538
Grip	54	538
Hand	55	539
Hydraulic	56	539
Pneumatic	57	539
Trolley	58	540
Holders, Brush	59	147
Carbon	177	176
Fuse	153	171
Shade	289	205
Holders		
Die	286	792
Drill	287	792
Nipple	288	793
Tap	289	793
Tire Bolt	34	742
Tool	290	793
Hollow Chisel Mortising Machines	362	686
Hollow Milling Tools	306	796
Honey Making Appliances	91	889
Hoods and Fixtures, Street Lamp	143	168
Hoof Cutters	25	741
Hooks, Shackle	68	542
Hoop Benders	15	616
Hoop Coilers	16	616
Hoop Cutters	17	616
Hoop Drivers	97	627
Thin	5	615
Hoop Flaring Machines	18	617
Hoop Nailers	19	617
Hoop Planing Machines	20	617
Hoop Pointers and Lappers	21	617
Hoop Punches	98	627
Hoop Punching Machines	22	617
Hoop Punching, Cutting and Flaring Machines	23	617
Hoop Riveting Machines	24	617
Hoop Rolls	99	627
Hopper Scales	150	908
Hoppers, Concrete	36	871
Horizontal Boring Machines	95	750
Horizontal Centrifugal Pumps	259	393
Horizontal Drills	124	755
Horizontal Mortising Machines	See 358	685

	Heading	Page
Horizontal Pumps ..... See	304	408
Horizontal Tubular Boilers, Portable ..... See	6	275
Stationary ..... See	6	275
Horizontal Wood Boring Machines ..... See	262	665
Horning Presses	525	833
Horse Powers	34	578
Hose, Air Brake	13	438
Hose Making Machines	144	906
Hose Wrapping Machines, Rubber	144	906
Hosiery Labeling Machines	88	505
Hosiery Presses	91	506
Hosiery Stamps	102	507
Hot Air Pumping Engines	245	389
Hot Pressed Nut Machines	60	745
House Heating Boilers	5	275
House Pumps ..... See	278	396
Household Sewing Machines	156	911
Hub Band Expanding Machines	240	663
Hub Band Rolling Machines	250	664
Hub Block Cut-Off Saw Blades	252	664
Hub Boring Machines	234	662
Hub Forming and Drilling Machines	7	739
Hub Lathes	244	663
Hub Machines	6	739
Hub Mortisers	246	663
Hub Reaming Machines	249	664
Hull Separators, Rice	142	905
Hullers, Clover	35	579
Coffee	35	870
Cotton	40	872
Grain	83	598
Pea	36	580
Rice	142	905
Hurl Cutters	18	866
Huskers and Shredders, Corn	37	580
Hydraulic Bending Machines	459	822
Hydraulic Cranes	31	531
Hydraulic Elevators ..... See	48	536
Hydraulic Engines	31	309
Hydraulic Hoists	56	539
Hydraulic Jacks	60	540
Hydraulic Presses	526	833
Hydraulic Punches	545	838
Hydraulic Riveting Machines	558	840
Hydraulic Test Pumps	310	413
Hydraulic Testers	176	919
Hydraulic Valves	148	352
Hydro-Extractors	16	493
Ice and Refrigerating Machinery	92	889
Ice Shavers, Confectioners'	38	871
Igniters, Gas Engine	180	176
Illuminated Signs, Electric	296	207
Implements, Agricultural	38	580
Garden	39	581
Pruning	40	581
Incandescent Cut-Outs	117	160
Incandescent Lamp Bases	21	139
Incandescent Lamp Cleaners	275	202

	Heading	Page
Incandescent Lamp Reflectors	268	202
Incandescent Lamp Replacers and Cleaners	275	202
Incandescent Lamps	209	184
Incandescent Lamp Sockets	299	208
Independent Chucks	See 267	788
Index Cutters, Blank Book	10	466
Indicators		
Lathe Test	395	810
Log Setting	See 210	657
Polarity	See 333	222
Speed	See 54	320
Steam Engine	87	331
Test	396	810
Water Level	See 146	171
Indigo Grinding Mills	44	874
Individual Type Type Setting Machines	119	480
Induction Coils	182	177
Industrial Railways	79	546
Ingot Lathes	205	772
Injectors, Boiler Feeding	88	331
Ink-Writing Registers, Morse	See 324	218
Inserted Cutter Lathe Tools	309	797
Inserted Tooth Circular Saw Blades	134	634
Inside Calipers	338	803
Inside and Keyhole Calipers	339	803
Inspection Cars	See 29	441
Inspectors' Gages	380	808
Inspectors' Test Pumps	311	413
Inspirators	See 88	331
Instruments, Electrical		
Measuring	226	190
Recording	See 265	201
Telegraph	324	218
Testing	333	222
Instruments, Scientific	151	908
Instruments, Surgical	170	917
Instruments, Surveying	See 151	908
Insulated Wire		
Annunciator	355	226
Magnet Wire	356	227
Rubber Covered Wire	357	227
Weather Proof Wire	358	227
Insulating Bushings	63	148
Insulating Machines	187	179
Insulating Tape	323	218
Insulator Brackets and Pins	50	145
Insulators, Glass	190	179
Mineral	191	179
Porcelain and Clay	192	180
Rubber	193	180
Third Rail	193A	180
Tree	194	180
Inter-Communicating Telephones	329	221
Interior and Auto-Thermo Cables	70	149
Interior Conduits	101	155
Interior Telephones	329	221
Internal Grinding Machines	See 172	767
Iron Armored Conduits	See 101	155

	Heading	Page
Iron Plane Gages	381	808
Iron Frame Rip-Saw Machines	See 435	708
Iron Pipe Fittings	112	338
Malleable	113	339
Iron and Steel Wire, Galvanized	359	228
Ironers, Body, Sleeve, etc.	95	890
Irons, Smoothing, Electric	See 174	175
Soldering, Electric	See 174	175
Ivory Butting Machines	129	901
Jack Screws	397	810
Jacks	59	540
Hydraulic	60	540
Leveling	291	793
Lifting	61	540
Log	179	646
Pneumatic	62	541
Pumping	63	541
Ratchet	64	541
Screw	65	541
Track	66	542
Wagon	67	542
Jacket Stretchers	79	475
Jacquard Cards	84	505
Jacquard Looms	66	503
Jacquard Machines	62A	502
Jars, Battery	197	181
Jaw Couplings	195	370
Spiral	197	371
Square	198	371
Jaws and Face-Plates	284	792
Jennies	See 7	491
Jet Steam Pumps	306	412
Jewelers' Chucks	266	788
Jewelers' Lathes	See 183	769
Jib Cranes	32	531
Jig and Scroll Saw Machines	433	708
Jig Vises, Universal	326	800
Job Printing Presses	110	479
Joiners' Bench Blocks	325	678
Joiners' Clamps	281	669
Jointer Heads	327	678
Jointers	See 380	690
Box Board	52	620
Glue	320	677
Heading	7	615
Shingle	213	658
Stave	33	618
Jointers, Emery	477	824
Jointers, Piano Key	129	901
Jointing and Doweling Machines	328	679
Joints, Flexible	12	438
Joints, Rail	72	450
Joints, Universal	292	794
Jollys	131	901
Jordan Engine Guard Boards	75	475
Jordan and Refining Engines	69	474
Journal Bearings	See 3	435

	Heading	Page
Journal Boxes	165	358
Railroad Car	42	444
Journal Lubricators	48	445
Junction and Outlet Boxes	198	181
Jute Looms ..... See	64	502
Jute Machinery	5A	490
Keirs, Bleaching ..... See	11	491
Key Duplicating Machines	177	768
Key Jointers, Piano	129	901
Key Seating Machines	178	768
Portable	179	768
Key-Seat Rules	411	812
Keys, Center	398	810
Standard, Flat Riveted	399	810
Keys, Telegraph ..... See	324	218
Kilns	59	879
Kneaders, Macaroni Paste	102	892
Kneading Machines, Bakers'	5	860
Knife Balancing Machines	329	679
Knife Grinding Machines	162	764
Planer Knife	323	677
Knife Switches	316	215
Knit Goods Cutting Machines ..... See	23	494
Knit Goods Presses	91	506
Knit Goods Sewing and Finishing Machines	26	495
Knitting Machine Attachments	21	494
Knitting Machine Burrs	85	505
Knitting Machinery	20	494
Knitting Machines, Circular	29	495
Gas Mantle	30	496
Straight Bed	31	496
Knitting Needles	86	505
Knives	115	630
Machine	116	630
Matcher ..... See	116	630
Panel Raising ..... See	116	630
Planer ..... See	116	630
Shingle	120	631
Spoke Lathe ..... See	116	630
Tenoning	122	631
Tonguing and Grooving ..... See	116	630
Veneer	124	632
Knives, Saws, Saw Tools, etc.	104	628
Knotters	87	505
Knuckle Joint Presses	527	833
Knurling Tools	307	796
Labeling Machines	93	890
Hosiery	88	505
Shade Roller	94	890
Lacing Machine, Belt	177	364
Lacquering and Varnishing Machines	187	921
Ladles, Foundry	79	748
Lamp Bases	21	139
Lamp Cleaners, Incandescent	275	202
Lamp Cord, Flexible Insulated	112	159
Lamp Guards	203	182
Lamp Reflectors, Incandescent	268	202
Lamp Replacers, Incandescent	275	202

	Heading	Page
Lamp Sockets	299	208
Lamps, Arc		
Alternating Current	205	182
Direct Current	206	183
Photo Engraving and Stage	207	184
Submarine	208	184
Lamps, Incandescent	209	184
Miniature	210	185
Renewed	211	185
Lamps, Miners' Safety	117	552
Land Rollers	41	581
Lanterns, Electric, Portable	212	186
Lap Cutters	125	632
Lap Grinders	126	632
Lap Machines	38	497
Finisher or Ribbon	39	498
Lapper Feeders ...See	37	497
Lappers and Pointers, Hoop	21	617
Lard Coolers	20	866
Lard Driers	20	866
Lard Mixers	20	866
Lasts, Shoe	159	913
Latch-Key Duplicating Machines	177	768
Lath Binders and Bundlers	167	642
Lath Binders and Trimmers	168	642
Lath Bolters	169	642
Lath Machines...See	171	643
Lath Mills	171	643
Lath Mills and Bolters	172	644
Lathe Accessories	343	682
Back Rests	344	682
Chisel Calipers	345	682
Lathe Chucks	346	682
Plug Cutters	347	682
Turners' Sizers	348	683
Lathe Attachments	180	768
Lathe Chucks	267	788
Lathe Chucks, Woodworking	346	682
Lathe Dogs	280	791
Lathe Pans...See	285	792
Lathe Test Indicators	395	810
Lathe Tools	308	797
Inserted Cutter	309	797
Lathes, Metalworking	181	769
Automatic Screw Cutting	213	775
Axle	182	769
Bench	183	769
Bolt	184	770
Boring	185	770
Brass Workers'	186	770
Buffing ...See	208	773
Chucking	221	777
Crank Shaft	189	771
Cutting-Off	190	771
Die Reaming	191	771
Double Spindle	192	771
Drilling	193	771
Driving Wheel	194	771

	Heading	Page
Lathes, Metalworking, continued.		
Engine ..... See	212	774
Extension	196	771
Facing	197	772
Foot	198	772
Forming ..... See	186	770
Fox ..... See	186	770
Fox Monitor ..... See	186	770
Gap	202	772
Gun	203	772
Hand ..... See	216	775
Ingot	205	772
Jewelers' ..... See	183	769
Polishing	208	773
Projectile	209	773
Pulley	210	773
Roll Turning	211	774
Screw Cutting	212	774
Set Over ..... See	186	770
Shafting	215	775
Speed	216	775
Spinning	217	776
Stud ..... See	184	770
Turret	220	777
Lathe, Stone Turning	166	915
Lathes, Woodworking	331	679
Axle Tree	332	679
Back Knife	333	679
Foot Power Wood Turning	334	679
Gage	335	680
Golf Club Turning	336	680
Handle	337	680
Hub	244	663
Pail and Tub	100	627
Pattern Makers'	339	680
Spoke	245	663
Variety	341	681
Wood Turning	342	681
Launches, Electric	213	186
Laundry Blowers	8	861
Laundry Machinery	95	890
Lawn Mower Grinding Machines	163	765
Lawn Mowers	46	584
Layers and Twisters, Paper Twine	6	490
Laying and Forming Machines	5	490
Lead Encased Cables	71	149
Lead Joint Removers	503	828
Lead and Rule Cutters	98	478
Leaf Softeners, Tobacco	183	920
Leaf Tobacco Packers	183	920
Leather Belting	171	361
Leather Presses	99	892
Leather Splitting Horses	100	892
Leather Working Machinery	96	891
Lehrs, Glass	84	887
Lens Cutters, Opticians'	123	899
Lens Drills, Opticians'	123	899
Letter Cancelling Machines	101	892

	Heading	Page
Levelers, Sole	158	912
Leveling Jacks	291	793
Leveling Machines, Barrel	25	617
Levels	400	810
Bench	401	811
Engineers' and Plumbers'	402	811
Pocket	403	811
Lever Drills	See 140	759
Lever Foot Presses	528	833
Lever Paper Cutters	See 49	470
Lever Punches	546	838
Lever Shears	582	844
Lever Trip Hammers	491	826
Lifters, Steam Board	222	660
Lifting Jacks	61	540
Light Locomotives	47	445
Light and Power Switchboards	308	211
Lighting Apparatus, Electric Car	79	151
Lighting Apparatus, Gas	157	172
Lighting and Heating Apparatus, Car	19	439
Lightning Arresters	216	186
Lights, Desk	214	186
Pocket	See 212	186
Search	287	205
Lime Grinding Mills	44	874
Lime Slackers and Pulverizers	16	866
Limit Gages	382	808
Line Materials, Special Insulators, Line Fittings, etc	217	187
Line Protectors, Telephone	260	200
Linemen's Construction Tools	106	157
Liners, Draughtsmen's	53	877
Liners, Section	404	811
Lining Machines	53	621
Link-Belt Conveyors	25	530
Link Belting	169	360
Links, Fuse	See 354	226
Linoleum and Oil Cloth Printing Machines	56	501
Linotype Machines	See 120	480
Linseed Oil Machinery	122	899
Linseed Oil Presses	138	904
Linters, Oil Mill	121	899
Liquid Batteries, Open Circuit	27	142
Liquor Heaters (Tanners' Machinery)	99	892
Liquor Logs, Tanners'	99	892
Lithographers' Machinery	92	477
Lithographic Printing Presses	111	480
Live Rolls	173	644
Live Steam Superheaters	132	343
Loaders, Hay	42	581
Loaders, Wagon	143	906
Loading, Bagging and Weighing Machines	1	566
Lock Corner Box Machines	54	621
Lock Cutters	26	617
Lock Folding Machines	496	827
Lock Joint Calipers	340	803
Locks, Electric	See 122	162
Locomotive Axles	See 2	435
Locomotive Bell Ringers	4	436

	Heading	Page
Locomotive Coaling Chutes	60	448
Locomotive Cranes	33	532
Electric	34	532
Locomotive Engines	32	309
Locomotive Frame Drills	126	756
Locomotive Headlights	41	444
Locomotive Tubular Boilers	9	290
Locomotive Wheel Tires	51	446
Locomotives	43	445
Compressed Air	44	445
Electric	45	445
Light, Steam	47	445
Mine, Electric	228	190
Steam	46	445
Log Chains	18	528
Log Band Saw Mills	See 196	651
Log Decks	177	645
Log Hauls	178	645
Log Jacks	179	646
Log Mills	180	646
Log Rollers	181	646
Log Setting Indicators	See 210	657
Log Stops	183	647
Log Turners	184	647
Steam	225	661
Log and Slab Conveyors	175	645
Logging Cars	30	442
Logging Trucks	74	544
Logs, Tanners' Liquor	99	892
Long Filler Bunching Machines	183	920
Loom Pickers	89	505
Loom Reeds and Harness	92	506
Loom Stop Motions	90	506
Looms	63	502
Carpet	64	502
Cotton	65	502
Jacquard	66	503
Jute	See 64	502
Rug	64A	502
Silk	68	503
Woolen	69	503
Worsted	70	503
Loopers, Knit Goods	27	495
Loose Pulley Oilers	213	377
Low Water Alarms	46	316
Low and High Water Floats, Electric	146	171
Lubricators, Car Journal	48	445
Lubricators and Oiling Devices	90	332
Automatic	91	332
Automatic Grease Cups	95	333
Central Tank System	92	332
Force Feed, Mechanical	93	332
Grease Cups	94	333
Oil Cups	96	333
Sight Feed Oil Cups	97	334
Lumber Buggies	185	648
Lumber Driers	See 59	879
Lumber Edgers	See 298	672

	Heading	Page
Lumber Kilns	59	879
Lumber Mill Machines	187	648
Lumber Stackers	187A	649
Lumber Trimmers	188	649
Lumber Trucks	74	544
Macaroni Machinery	102	892
Macerators, Sugar	169	916
Machine Bits	261	665
Machine Drill Bits	294	671
Machine Knives	116	630
Machine Screw Taps	439	818
Machine Screws	297	795
Machine Shop Furniture	285	792
Machinists' Clamps, Malleable	351	804
Steel	352	804
Machinists' Hammers	393	810
Machinists' Small Tools	329	801
Machinists' Vises	318	798
Magnet Wire	356	227
Magnetic Chucks	268	789
Magnetic Ore Separators	125	554
Magnetic Separators	100	601
Magneto Bells and Ringers	222	188
Magnets, Electro	223	189
Permanent	224	189
Mail Handling Machines	103	893
Malleable Clamps, Machinists'	351	804
Malleable Iron Pipe Fittings	113	339
Mandrels	293	794
Blacksmiths' Taper	31	742
Circular Saw	351	683
Mangles, Laundry	95	890
Starch	See 11	491
Manhole Pumps	See 280	398
Manual Fire Alarm Signal Systems	291	205
Manuscript Duplicating Machines	60	880
Marine Engines	33	309
Steering	34	310
Marine Chains	12	527
Marine Machinery	104	893
Marine Pumps	288	399
Bilge	289	400
Duplex Vertical, Plunger Pattern	290	400
Fire	291	400
Ship Deck	292	401
Vertical, Air	293	401
Vertical, Piston	294	401
Marine Switch Boxes	47A	145
Marine Tubular Boilers	10	292
Water Tube Boilers	See 15	298
Markers, Plant Row	43	582
Markers, Tire	See 38	742
Marking Machines, Floor Board	305	674
Metal	497	827
Marking and Measuring Machines, Cloth	32	496
Marshmallow Depositors	38	871
Mash Machines, Malt and Grain	12	864
Mash Pumps	295	401

	Heading	Page
Mast Arms	225	189
Master Taps	440	818
Masticators (Butchers' Machinery)	20	866
Match Machinery	105	893
Matcher Accessories	353	684
Bit Setters	354	684
Matchers and Planers	387	692
Matcher Heads	355	684
Matcher Knives ..See	116	630
Matchers ..See	387	692
Box Board	55	621
Rotary	101	627
Matchers, Molders and Planers	388	693
Matching Machines, Flooring End	308	675
Mathematical Instruments ..See	151	908
Mattress Machinery	106	893
Measuring Boxes, Concrete	36	871
Measuring Instruments, Electrical	226	190
Measuring Machines, Floor Board	305	674
Measuring Machines, Leather	99	892
Measuring Machines, Tool Room	405	811
Measuring and Marking Machines, Cloth	32	496
Mechanical Boiler Cleaners	48	317
Mechanical Lubricators, Force Feed	93	332
Mechanical Stokers	129	343
Medical Batteries	25	140
Melter Pan Pumps	296	402
Melting Furnaces	77	885
Melting Pots, Glass	84	887
Melting Tank Blocks, Glass	84	887
Mercury Gages	70	324
Mercury Plumb Bobs	407	811
Metal Bending Machines	458	822
Metal Filing Machines	478	824
Metal Testing Machines	609	849
Metal Working Machinery	455	821
Metallic Packing	100	336
Meters	107	893
Gas	108	893
Oil	109	894
Steam	110	894
Water	111	894
Meters, Recording, Electrical	265	201
Micrometer Caliper Gages	384	808
Micrometer Calipers	341	803
Micrometer Gages	383	808
Micrometers	406	811
Milk Condensing Apparatus	112	894
Milk and Cream Pasteurizers	46	875
Milk and Cream Sterilizers	46	875
Milling Cutters	278	790
Milling Machine Attachments	222	778
Milling Machine Vises	319	799
Milling Machines	223	778
Automatic Wire Cutting and Milling Machines	630	851
Bolt and Nut Head Milling Machines	57	745
Boring and Milling Machines	98	751
Hand	224	779

	Heading	Page
Milling Machines, continued.		
Universal	225	779
Vertical	226	780
Wire ..... See	223	778
Mills, Bark	99	892
Mills, Boring and Turning	101	752
Mills, Cane	169	916
Mills, Chaser	14	865
Mills, Curd	46	875
Mills, Fanning	82	598
Mills, Dry Grinding	44	874
Mills, Grinding, Agricultural	44	582
Mills, Grinding (Flour Mill Machinery)	84	598
Attrition	85	598
Buhr	86	598
Roller	87	599
Mills, Lath	171	643
Log	180	646
Mills, Metal Rolling	561	841
Mills, Ore Stamp	119	553
Mills, Paint	125	900
Mills, Pug	14	865
Mills, Quartz	118	552
Mills, Soap	160	914
Mills, Wire Rolling	647	854
Mills and Bolters, Lath	172	644
Mimeographs	61	880
Mine Cars	87	548
Mine Locomotives, Electric	228	190
Mine Signaling Apparatus	126	554
Mine Tipples	127	554
Mineral Grinding Mills	44	874
Mineral Insulators	191	179
Miners' Bellows	7	861
Miners' Safety Lamps	117	552
Miners' Tools	128	554
Miniature Incandescent Lamps	210	185
Miniature Lamp Sockets	300	209
Miniature Railways ..... See	24	868
Mining Blowers	8	861
Mining Cages	97	550
Mining Instruments ..... See	151	908
Mining Machinery	90	550
Mining Timber Framing Machines	189	649
Mitering Machines	356	685
Mitering Machines, Brass Rule	99	478
Miter Saws ..... See	130	633
Mixers	89	599
Clay	32	869
Concrete	36	871
Dough	5	860
Lard	20	866
Macaroni Paste	102	892
Pill Mass	127	900
Sausage	20	866
Soap	160	914
Molders' Bellows	7	861

	Heading	Page
Molders, Sole	158	912
Molders' Tools	33	870
Molding Machines, Candle	22	867
Molding Machines, Sand	80	748
Pulley	81	748
Molding, Wire	238	195
Molds, Brick	14	865
Butter	46	875
Candy	38	871
Clay	33	870
Glass	84	887
Hat	90	889
Soap	160	914
Solder	598	848
Monkey Wrenches	449	820
Morocco Tools	98	891
Morse Ink-Writing Registers	See 324	218
Mortar Grinding Mills	44	874
Mortisers' Chisels	366	686
Mortisers, Hub	246	663
Mortisers, Sash Pulley	357	685
Mortisers' Stocks	367	687
Mortising Machines	358	685
Car	359	685
Chain Saw	360	686
Chair Bit	83	625
Foot Power	361	686
Hollow Chisel	362	686
Horizontal	See 358	685
Hub	246	663
Vertical	See 358	685
Mosaic Machines, Stone	166	915
Motions, Loom, Stop	90	506
Motor Armatures	13	138
Motor Cycles	115	895
Motor-Generators	229	191
Motor Starters	See 281	204
Motor Starting and Regulating Rheostats	281	204
Motor Vehicles	113	894
Commercial	114	894
Electric Automobiles	117	895
Gasoline Automobiles	118	896
Motor Cycles	115	895
Steam Automobiles	119	898
Motors	44A	316
Gas and Gasoline	See 29	304
Pneumatic	44C	316
Water	44D	316
Motors, Electric	230	191
Alternating Current	231	191
Automobile	232	192
Battery or Toy	233	192
Direct Current	234	192
Fan	See 135	166
Street Railway	236	195
Moulders, Matchers and Planers	388	693
Moulding Cutters	368	687

	Heading	Page
Moulding Machines	369	687
Spiral	370	688
Variety ..... See	372	688
Moulding Sanders	406	698
Moulding and Shaping Machines, Edge	372	688
Spindle and Attachments	373	688
Movers, Car	67	450
Moving Picture Apparatus	120	898
Moving Stairways ..... See	51	537
Mowing Machines	45	583
Lawn	46	584
Mufflers, Wire	641	853
Mulay Saw Blades	139	636
Mule Stands	235	386
Mules, Spinning	40	498
Multiple Boring Machines	269	667
Multiple Spindle Drills	127	756
Multiple or Gang Punches	543	837
Mustard Grinding Mills	44	874
Nail Machinery	642	853
Nailers, Hoop	19	617
Nailing Machines, Box	56	621
Name Plates	294	794
Nautical Instruments ..... See	151	908
Needles, Comber	77	504
Needles, Knitting Machine	86	505
Niggers	190	649
Nipple Chucks	269	789
Nipple, Drilling, Tapping and Slabbing Machines	10	739
Nipple Heading Machines	11	740
Nipple Holders	288	793
Nipple and Screw Slotters	12	740
Notching Machines, Chair Seat	87	626
Notching Machines, Metal	498	827
Fish Plate	499	828
Notching Presses, Armature Disk	509	829
Numbering Machines, Type High	93	477
Numbering and Paging Machines	16	466
Nut Facing Machines	52	745
Nut Locks	69	450
Nut Machines, Automatic	58	745
Cold Pressed	59	745
Hot Pressed	60	745
Nut Tappers	62	746
Automatic	63	746
Geared	64	746
Rotary	65	746
Two Spindle	66	746
Oblong Grates	82	329
Off-Set Vises	320	799
Office Wire, Electric	355	226
Ohmmeters ..... See	333	222
Oil Cloth and Linoleum Printing Machines	56	501
Oil Cups	96	333
Sight Feed	97	334
Oil Engines	35	311
Oil Extractors	283	792
Oil Feed Sockets	423	814

	Heading	Page
Oil Feeders, Boiler	64	323
Oil Filters	66	323
Oil Heaters	394	810
Oil Hole Covers and Cups	276	790
Oil Meters	109	894
Oil Mill Machinery	121	899
Oil Pumps	297	402
Oil Separators	See 283	792
Oil Well Tools	193	923
Oilers, Loose Pulley, etc.	213	377
Oiling Devices	See 90	332
Onion Pullers	56	587
Open Circuit Dry Batteries	26	141
Open Circuit Liquid Batteries	27	142
Open Switch Boxes	47A	145
Opener Feeders	See 37	497
Openers	41	498
Openers, Door, Electric	122	162
Ophthalmoscopes	123	899
Opticians' Tools and Appliances	123	899
Orderers, Tobacco	183	920
Ore Breakers	43	873
Ore Buckets	6	525
Ore Cars	See 87	549
Ore Concentrators	100	551
Ore Crushers	43	873
Ore Driers	58	878
Ore Feeders	113	552
Ore Handling Machinery	20	529
Ore Samplers	122	553
Ore Screens	152	909
Ore Separators	124	553
Ore Testers	122	553
Ore Washers	129	554
Organ Reed Board Machines	129	901
Outfits, "X-Ray"	361	228
Outlet Boxes	198	181
Outside Calipers	342	803
Oval Cutters	288A	670
Ovens, Bakers'	5	860
Overhead Traveling Drills	128	757
Overseaming Machines	See 26	495
Package Carriers	27	868
Package Elevators	45	536
Packers, Barrel Head	8	615
Flour, Bran, etc.	90	600
Shingle	216	659
Stave	34	618
Tobacco	183	920
Packing	98	334
Gum, Fibrous, etc.	99	334
Metallic	100	336
Paging and Numbering Machines	16	466
Pail or Tub Lathes	100	627
Pail and Tub Machinery	90	626
Paint Burners	124	899
Paint Grinding Mills	44	874
Paint Mixing Machinery	125	900

	Heading	Page
Paint Spraying Machines	126	900
Painters' Oil Hand Pumps	281	398
Pamphlet Binding Machines	9	465
Panel Boards	242	196
Panel Raisers	374	689
Panel Raising Knives ..... See	116	630
Pans, Grinding, Wet and Dry	115	552
Pans, Lathe ..... See	285	792
Pans, Tote	285	792
Pans and Barrels, Amalgamating	92	550
Paper Bag Machines ..... See	20	467
Paper Box Covering and Topping Machines	40	469
Paper Box Board Cutters	42	469
Paper Box Ending Machines	44	470
Paper Box Gluing Machines	45	470
Paper Box Machinery	37	469
Paper Box Printers	47	470
Paper Box Scorers	43	470
Paper Corrugating Machines	63	473
Paper Cutters, Lever ..... See	49	470
Paper Cutting Machines	49	470
Automatic Ream Cutters	50	471
Card Cutters	51	471
Lever Paper Cutters ..... See	49	470
Paper Drills	33	468
Paper Feeders	55	471
Paper Finishing Calenders	61	473
Paper Folders	56	472
Paper Machinery Accessories	70	474
Calender Rolls	71	474
Dandy Rolls	72	474
Fourdrinier Wires	73	475
Guard Boards, Jordan Engine	75	475
Paper Stops	76	475
Screen Plates	77	475
Spool Slotters	78	475
Stretchers, Jacket	79	475
Paper Mill Machinery	57	472
Paper Mill Pumps	298	402
Paper Perforating Machines	18	466
Paper Pulleys	222A	381
Paper Saturating and Drying Machines	80	475
Paper Slitting Machines	53	471
Paper Slitting and Rewinding Machines	54	471
Paper Stops	76	475
Paper Testers	177	919
Paper Tube Choppers	39	469
Paper Tube Rolling Machines	46	470
Paper Twine Twisters and Layers	6	490
Paper Winders	86	476
Parallel Swing Cut-Off Saw Machines	438	710
Paring Machines, Fruit	47	584
Paring and Peeling Machines	5	860
Passenger Cars	31	442
Passenger Elevators	48	536
Pasteurizers, Milk and Cream	46	875
Pasteurizing Apparatus, Beer	9	862
Pasting and Gluing Machines, Book	15	466

	Heading	Page
Patch Bolt Taps	441	818
Pattern Makers' Lathes	339	680
Pattern Makers' Vises	162	641
Pay-Out and Take-Up Wire Reels	267	201
Pea Hullers	36	580
Peanut Oil Presses	139	904
Pearling Machines	91	600
Pebble Cylinder Mills (Pottery Machinery)	131	901
Pedal Barrel Machines	13	740
Pedal Pin Machines	14	740
Peeling Machines, Canning House	23	867
Peeling and Paring Machines, Bakers'	5	860
Pendants, Electric ..... See	144	169
Percolators, Drug	127	900
Perforating Machines, Paper	18	466
Perforating Presses, Metal	529	834
Perforators, Check	31	869
Perimeters, Opticians'	123	899
Permanent Magnets	224	189
Pharmaceutical Machinery	127	900
Phorometers, Opticians'	123	899
Phosphate Dredging Centrifugal Pumps	260	393
Phosphate Grinding Mills	44	874
Photo Engraving Arc Lamps	207	184
Photograph Machines	128	901
Photometers	244	197
Piano Action Machinery	129	901
Piano Key Jointers	129	901
Piano Wire Drawing Machines ..... See	129	901
Pick Eye Punching Machines	551	839
Pickers, Loom	89	505
Picket Machines	375	689
Heading	376	689
Pointing	377	689
Picking or Preparing Machinery, Cotton, etc.	33	497
Piecing Saw Benches	103	627
Pile Driving Machinery	130	901
Pill Coating Machines	127	900
Pill Compressors	127	900
Pill Mass Mixers	127	900
Pillar Cranes	35	532
Pillow Blocks	164	358
Pin Hole Boring Machines	270	667
Pin, Rod and Dowel Machines	405	697
Pin Making and Pointing Machines	378	689
Pin Vises	321	799
Pinking Machines ..... See	157	912
Pins, Insulator	50	145
Pipe	101	336
Bent	102	336
Cast Iron	103	336
Riveted Steel	104	337
Spiral Riveted	105	337
Wooden	106	337
Wrought Iron	107	337
Pipe Bending Machines	460	822
Pipe Calking Machines	500	828
Pipe Cutters, Hand	502	828

	Heading	Page
Pipe Cutting and Threading Machines	501	828
Pipe Dies, Hand	355	805
Pipe Dies and Die Heads	279	791
Pipe Fittings	110	337
Brass	111	337
Cast Iron	112	338
Malleable Iron	113	339
Pipe Railing Fittings	114	339
Pipe Tapping Machines	251	786
Pipe Taps and Reamers	444	819
Pipe Testers	178	919
Pipe Tongs	445	819
Pipe Vises	322	799
Pipe Wrenches	450	820
Pipe and Tube Mill Machinery	504	828
Pitching Machines, Brewers'	12	864
Plain Grinding Machines	164	765
Plain Set Collars	186	366
Plain Water Columns	51	318
Plain Whistles	160	357
Plaiting Machines	See 157	912
Planer Attachments	227	780
Planer Centers	228	780
Planer Chucks	270	789
Planer Knife Grinding Machines	323	677
Planer Knives	See 116	630
Planer Tools	310	797
Planer Vises	323	800
Planers, Metalworking	229	780
Plate	230	781
Traveling Head	231	781
Planers, Woodworking	379	690
Buzz	380	690
Chair Back	72	624
Daniels'	381	691
Dimension	382	691
Double Surface	See 379	690
Heading	9	615
Pony	See 379	690
Radius	385	692
Shingle	217	660
Stave	35	618
Timber	386	692
Planers and Matchers	387	692
Planers, Matchers and Moulders	388	693
Planing Machines, Electrotypers'	See 89	477
Planing Machines, Hoop	20	617
Planing Machines, Stone	166	915
Planimeters	116	339
Planishing Machines	506	829
Plantation Cars	33	442
Planters, Beet	48	584
Corn	49	584
Cotton	50	585
Potato	51	586
Plaster Grinding Mills	44	874
Plate Bending Machines	461	822
Plate Couplings	193	369

	Heading	Page
Plate Engraving Machines	91	477
Plate Holding Blocks	96	478
Plate Planers	230	781
Plate Shears	583	845
Plate Straightening Machines	605	849
Plates, Base	163	357
Plates, Carbon	77	151
Plates, Name	294	794
Plates, Screw	419	814
Plates, Screen	77	475
Platform Scales	150	908
Platforms, Car	20	439
Pliers, Wire	643	853
Plodders, Soap	160	914
Plow Share Grinding Machines	165	765
Plows	52	586
Steam	53	587
Plug Cutters, Lathe	347	682
Plugs, Attachment	247	197
Plugs and Cut-Outs, Telegraphic	See 324	218
Plumb Bobs, Mercury	407	811
Plumbers' and Tinners' Furnaces	79	885
Plunger Elevators	See 48	536
Pneumatic Cranes	36	532
Pneumatic Drills	131	757
Mining	108	551
Pneumatic Hammers	492	826
Pneumatic Hoists	57	539
Pneumatic Jacks	62	541
Pneumatic Motors	44c	316
Pneumatic Punches	547	838
Pneumatic Riveting Machines	559	840
Pocket Levels	403	811
Pocket Lights	See 212	186
Pocket Slide Calipers	See 334	802
Pointers and Lappers, Hoop	21	617
Pointing Machines, Bolt	61	746
Picket	377	689
Wire	644	853
Pointing and Pin Making Machines	378	689
Points, Carbon	77	151
Polarity Indicators	See 333	222
Pole Brackets	See 50	145
Pole Changers	See 262	200
Pole and Shaft Machinery	389	693
Poles, Transmission Line, Telephone Line, etc.	252	198
Trolley	253	199
Police Alarms	293	206
Police Signal Systems	293	206
Polishers, Coffee	35	870
Polishers, Rice	142	905
Polishing Lathes	208	773
Polishing Machines, Grain	92	600
Polishing Machines, Gun Barrel	466	823
Polishing Machines, Sash and Door	See 408	698
Polishing and Buffing Machines, Metal	465	823
Polishing and Finishing Machines, Wheel	247	663
Polishing and Surfacing Machines, Door	446	712

	Heading	Page
Pony Planers	See 379	690
Pop Valves	See 154	354
Porcelain Cleats	87	152
Porcelain and Clay Insulators	192	180
Porcelain and Clay Tubes	See 342	224
Porcelain Lined Hand Pumps	282	398
Porous Cups	257	199
Portable Boring Machines	271	667
Portable Cranes	37	533
Portable Cylinder Boring Bars	See 94	750
Portable Drills, Metalworking	129	757
Electric	130	757
Pneumatic	131	757
Portable Engines	36	311
Portable Fans, Alternating Current, Electric	139	167
Portable Fans, Direct Current, Electric	140	168
Portable Forges	73	884
Portable Keyseaters	179	768
Portable Lanterns, Electric	212	186
Portable Radial Boring Machines	272	667
Portable Riveting Machines	560	841
Portable Saw Mills	208	656
Portable Testing Sets	See 333	222
Portable Tracks	89	549
Portable Tubular Boilers, Horizontal	See 6	275
Vertical	See 6	275
Positive Pressure Blowers	8	861
Post Boring Machines	273	667
Post Drills	132	757
Post Hangers	212	376
Post Hole Diggers	19	572
Posts, Binding	See 103	156
Posts, Bumping	58	448
Potato Cutters	14	571
Potato Diggers	20	572
Potato Planters	51	586
Potato Sorters	62	590
Pottery Machinery	131	901
Pottery Printing Presses	131	901
Pouncers, Fur	81	886
Powder Dividers	127	900
Powder Triturators	127	900
Power Hack Saws	418	813
Power Hammers	493	826
Power Presses	530	834
Power Pumps	299	403
Duplex	300	406
Triplex	301	407
Power Vacuum Pumps	318	416
Power Punches	548	838
Power Shears	584	845
Power and Light Switchboards	308	211
Power Transmission Appliances	161	357
Powers, Horse	34	578
Tread	69	593
Preparing Machinery, Wool	54	501
Preparing and Spinning Machines	7	491
Pressed Steel Pulleys	223	381

	Heading	Page
Presses, Bookbinders'		
Blocking	19	466
Die	20	467
Embossing	21	467
Gilding	22	467
Signature	23	467
Smashing	24	467
Standing	25	467
Presses, Compressor and Expressor	132	902
Baling	133	902
Brick	15	865
Cheese	46	875
Cotton	134	903
Cotton Seed and Cotton Seed Oil	135	904
Filter	136	904
Fruit	137	904
Glass	84	887
Hosiery	91	506
Leather	99	892
Linseed Oil	138	904
Macaroni	102	892
Oil Mill	121	899
Peanut Oil	139	904
Sewer Pipe	153	910
Tile	181	919
Tobacco	140	905
Wine and Cider	141	905
Presses, Metalworking	507	829
Adjustable, Inclinable	508	829
Arbor	89	749
Armature Disk Notching	509	829
Bench	510	829
Bench, Foot	511	829
Blanking	512	830
Broaching	See 464	823
Cabbaging	514	830
Cam, Double Action	515	830
Coining	516	830
Crank	See 530	834
Double Action, Cam	515	830
Drawing	518	831
Drop	519	831
Embossing	520	831
Folding and Seaming	521	832
Foot	522	832
Forcing	523	832
Forging	524	832
Horning	525	833
Hydraulic	526	833
Knuckle Joint	527	833
Lever Foot	528	833
Perforating	529	834
Power	530	834
Punching	531	835
Screw	532	835
Stamping	See 520	831
Straight Sided	534	836
Sub	535	836
Trimming	536	836

	Heading	Page
Presses, Pottery Printing	131	901
Presses, Printing	106	479
Copper Plate	107	479
Cylinder	108	479
Embossing	109	479
Job	110	479
Lithographic	111	480
Steel Plate	112	480
Two Revolution	See 108	479
Web Perfecting	114	480
Presses, Proof	101	479
Presses, Woodworking		
Chair	84	626
Veneer	459	714
Wheel Box	248	664
Pressure Blowers	8	861
Pressure, Current and Voltage Registers	270	202
Pressure Recording Gages	71	324
Pressure Regulators	122	341
Pricking and Shearing Machines	537	836
Print Works Machinery and Accessories	55	501
Oil Cloth and Linoleum Printing Machines	56	501
Printers, Box Board	57	622
Printers, Butter	46	875
Printers, Paper Box	47	470
Printers' Plate Holding Blocks	96	478
Printers' Quoins	102	479
Printers' Rollers	100	478
Printers' Tools and Accessories	95	477
Blocks, Plate Holding	96	478
Counting Machines	97	478
Cutters, Lead and Rule	98	478
Mitering Machines	99	478
Printers' Rollers	100	478
Proof Presses	101	479
Quoins	102	479
Roller Adjusters	103	479
Roller Making Machines	104	479
Rule Curving Machines	105	479
Printing Drums, Tapestry	103	507
Printing Machines, Oilcloth and Linoleum	56	501
Printing Machinery	87	477
Printing Presses	106	479
Printing Presses, Pottery	131	901
Printing Rollers, Copper	79	504
Profiling Machines	232	781
Programme and Electric Clocks	See 336	223
Projectile Lathes	209	773
Projectors	See 287	205
Proof Presses	101	479
Prospecting Drills	See 104	551
Protectors, Telephone Line	260	200
Protractors, Bevel	408	811
Pruning Implements	40	581
Pug Mills	14	865
Pullers, Beet	55	587
Onion	56	587
Stump	57	587

	Heading	Page
Pullers, Spike ..... See	88	454
Pulley Boring Machines	274	668
Pulley Lathes	210	773
Pulley Molding Machines	81	748
Pulley Taps	442	818
Pulleys	215	377
Clamp Hub	216	377
Double Arm Iron	217	378
Flange	218	378
Fly Wheel	219	379
Friction Clutch	220	379
Gallows or Guide	221	380
Grooved	222	380
Paper	222A	381
Pressed Steel	223	381
Single Arm or Plain	224	381
Split	225	381
Tight and Loose	226	382
Wood Split	227	383
Pulp Baling Presses ..... See	133	902
Pulp Crushers	64	473
Pulp Drying Machines	66	473
Pulp Machinery, Sulphite	84	476
Pulp Mill Machinery ..... See	57	472
Pulpers, Coffee	35	870
Pulverizers	45	875
Pulverizers, Clay	32	869
Pulverizers, Soil	7	567
Pump Governors	77	327
Pump Valves	150	352
Pumping Engines	244	389
Pumping Engines, Hot Air	245	389
Pumping Jacks	63	541
Pumps	246	389
Acid ..... See	304	408
Admiralty ..... See	288	399
Aeropher	249	389
Air	250	389
Ammonia	251	390
Artesian and Deep Well	252	390
Automatic Pumps and Receivers	253	391
Automatic Steam Vacuum	313	414
Ballast ..... See	288	399
Beer and Ale	279	397
Bilge	289	400
Boiler Feed ..... See	304	408
Boiler Test	309	413
Brewery ..... See	304	408
Centrifugal	257	391
Chain ..... See	278	396
Circulating ..... See	257	391
Cistern ..... See	278	396
Condensation ..... See	304	408
Crank and Fly Wheel, Vacuum	314	415
Creamery ..... See	304	408
Diaphragm	280	398
Direct Acting ..... See	304	408
Distillery ..... See	304	408

	Heading	Page
Pumps, continued.		
Divers'	52	877
Dredging	See 304	408
Drip	See 304	408
Duplex, Power	300	406
Duplex Steam	305	411
Duplex Vacuum	315	415
Duplex Vertical Plunger, Marine	290	400
Electric	271	394
Elevator	272	395
Fire	See 304	408
Fire, Marine	291	400
Force	See 299	403
Geared	See 299	403
Grouting	See 278	396
Hand	278	396
High Duty ,Centrifugal	258	392
Horizontal	See 304	408
Horizontal, Centrifugal	259	393
House	See 278	396
Hydraulic Test	310	413
Inspectors' Test	311	413
Jet Steam	306	412
Manhole	See 280	398
Marine	288	399
Mash	295	401
Melter Pan	296	402
Oil	297	402
Painters' Oil	281	398
Paper Mill	298	402
Phosphate Dredging	260	393
Porcelain Lined	282	398
Power	299	403
Power Vacuum	318	416
Rotary	302	407
Ship Deck	292	401
Single Fly Wheel Vacuum	323	417
Soap	303	408
Steam	304	408
Syphon	283	398
Test	308	412
Triplex, Power	301	407
Vertical Centrifugal	261	393
Vertical Piston, Marine	294	401
Vertical Steam	307	412
Windmill	324	417
Wooden, Hand	284	398
Punch, Angle Bender and Shear, Combined	592	847
Punches	539	836
Beam	540	836
Center	409	812
Cutting-Off	541	837
Fish Plate	542	837
Gang or Multiple	543	837
Hand	544	837
Hydraulic	545	838
Lever	546	838
Pneumatic	547	838

	Heading	Page
Punches, continued.		
Power	548	838
Screw	549	838
Punches, Hoop	98	627
Punches, Paper	26	468
Punching, Coping and Shearing Machines	553	839
Punching and Coping Machines	552	839
Punching, Cutting and Flaring Machines, Hoop	23	617
Punching and Cutting Machines, Strap	88	889
Punching and Forming Machines	554	839
Punching and Shearing Machines	555	839
Punching Machines, Hoop	22	617
Punching Machines, Metal	550	838
Pick Eye	551	839
Punching Presses	531	835
Purifiers	93	600
Purifiers, Ammonia	92	889
Purifiers, Feed Water	117	339
Push Buttons	261	200
Push Button, Flush or Snap Switches	314	214
Push Cars	See 29	441
Quadruplex and Duplex Telegraph Apparatus	See 324	218
Quartz Mills	118	552
Quillers	50	500
Quoins	102	479
Rack Cutting Machines	233	782
Racking Apparatus, Beer	12	864
Racks, Bread	5	860
Racks, Tool	See 285	792
Radial Drills	133	758
Radiator Valves	151	353
Radius Planers	385	692
Rag Cutters	82	475
Rag Dusters	67	474
Rail Bonds	263	201
Rail Braces	71	450
Rail Drills	134	758
Rail Fastenings	68	450
Nut Locks	69	450
Rail Braces	71	450
Rail Joints	72	450
Tie Plates	73	451
Rail Joints	72	450
Rail Straightening Machines	606	849
Rails	74	451
Railing Fittings, Pipe	114	339
Railway Gates	See 61	448
Railway Heads	42	498
Railway Signaling Apparatus	76	451
Railway Stand Pipes	See 92	455
Railway Water Columns	92	455
Railways, Cable	9	526
Railways, Industrial	79	546
Raisers, Panel	374	689
Rakes	58	588
Rammers, Foundry	82	748
Rasps	32	742
Ratchet Braces	332	802

	Heading	Page
Ratchet Drills	135	758
Hand	361	806
Ratchet Jacks	64	541
Ratchet Stocks	431	815
Ratchet Wrenches	451	821
Rawhide Belting	172	361
Ream Cutters, Automatic	50	471
Reamers	295	794
Hand	410	812
Reaming Machines	234	782
Reaming Machines, Hub	249	664
Reapers	59	588
Receivers, Telephone	See 328	219
Recording Instruments, Electric	See 265	201
Recording Meters	265	201
Recording Thermometers	134	344
Recording Wattmeters	See 265	201
Reducing Valves	See 122	341
Reducing Wheels	118	340
Reduction Mills (Brick Machinery)	15	865
Reeds and Harness, Loom	92	506
Reeling and Slitting Machines, Cloth	58	502
Reels, Bolting	94	600
Reels, Wire	645	853
Reels, Wire, Pay-Out and Take-Up	267	201
Reels, Yarn	51	500
Reference Disks	356	805
Refining and Jordan Engines	69	474
Reflectors, Incandescent Lamp	268	202
Refrigerator Cars	34	443
Refuse Conveyors	191	650
Registers, Cash	28	869
Registers, Fare	49	446
Registers, Grain	94A	601
Registers, Morse Ink-Writing	See 324	218
Voltage, Current, Pressure, etc.	270	202
Watchmen's	See 344	224
Regulators	See 279	203
Regulators	119	340
Damper	120	340
Feed Water	121	340
Pressure	122	341
Temperature	123	341
Re-heaters	124	342
Rejointers	27	617
Relays	324	218
Removers, Lead Joint	503	828
Tap	299	795
Renewed Incandescent Lamps	211	185
Repeaters	See 324	218
Replacers and Cleaners, Incandescent Lamp	275	202
Replacing Frogs	64	449
Re-Presses (Brick Machinery)	14	865
Re-Saws, Band	393	694
Blind Slat	392	694
Circular	See 391	693
Re-Sawing Machines	391	693
Re-Sawing Saw Blades	See 132	633

	Heading	Page
Retoothers	127	632
Re-seating Machines, Valve	125	342
Resistance Boxes	See 333	222
Resistance Coils	277	203
Resistance Rods	283	205
Resistance Wire	360	228
Rests, Slide	296	795
Retinoscopes	123	899
Return Flue Boilers	See 2	274
Return Tubular Boilers	11	295
Reversing Engines	See 30	307
Revolution Counters	54	320
Revolving Spargers, Brewers	12	864
Revolving Steam Pans	127	900
Rewinding and Slitting Machines, Paper	54	471
Rheostats, Adjustable, Cautery	279	203
Adjustable, Field	280	203
Adjustable, Motor Starting and Regulating	281	204
Adjustable, Theatre Dimming	282	204
Ribbon Lap Machines	39	498
Rice Machinery	142	905
Riding Galleries	24	868
Rim Dressing Machines	238	662
Rim Forming Machines, Tinsmiths'	613	849
Rim Rolling Machines	15	740
Ring Travelers	93	506
Ringers, Locomotive Bell	4	436
Ringers and Bells, Magneto	222	188
Rings, Spinning	100	507
Rinsing Machines, Bottlers'	9	862
Ripeners, Cream	46	875
Ripping and Straightening Machines	403	697
Rip-Saw Machines	See 435	708
Bevel and Miter	397	695
Double Revolving	398	695
Gang	399	696
Iron Frame	See 435	708
Self Feed	401	696
Variable Feed	402	697
Rippers, Gang	395	695
Rip-Saw Tables	See 422	704
Rivet Machines	556	840
Riveted Pipe, Spiral	105	337
Riveted Steel Pipe	104	337
Riveting Machines, Harness	88	889
Riveting Machines, Hoop	24	617
Riveting Machines, Metal	557	840
Hydraulic	558	840
Pneumatic	559	840
Portable	560	841
Road Building Machinery	143	906
Rock Breakers	43	873
Rock Crushers	43	873
Rocker Tenoning Machines	89	626
Rocking Grates	See 84	329
Rod Frames	646	854
Rod, Pin and Dowel Machines	405	697
Rods, End Measuring	366	806

	Heading	Page
Rods, Resistance	283	205
Roll Grinding Machines	166	765
Roll Turning Lathes	211	774
Roller Adjusters	103	479
Roller Bearings	255	786
Roller Making Machines	104	479
Roller Mills	87	599
Rollers, Carriage	See 196	651
Log	181	646
Rollers, Land	41	581
Rollers, Printers'	100	478
Rollers, Printing, Copper	79	504
Rollers, Road	143	906
Rollers, Spiked	143	906
Rolling Machines, Hub Band	250	664
Rolling Machines, Paper Tube	46	470
Rolling Machines, Sole Leather	97	891
Rolling Mill Engines	39	313
Rolling Mill Gages	385	809
Rolling Mills	561	841
Wire	647	854
Rolls, Dandy	72	474
Rolls, Fluted	82	505
Rolls, Hoop	99	627
Live	173	644
Rolls, Paper, Calender	71	474
Rolls, Smoothing	596	847
Roofing, Car	21	439
Roofing Machines	562	841
Root Cutters	15	571
Root Reamers, Dental	47	876
Rope, Transmission	228	383
Wire	78	546
Rope Laying Machines	See 5	490
Rope Machinery	See 2	490
Rope Sheaves	See 222	380
Rope Transmission Wheels	See 222	380
Rosettes	See 117	160
Rotary Blowers	8	861
Rotary Board Cutters	11	466
Rotary Converters	See 229	191
Rotary Matchers	101	627
Rotary Nut Tappers	65	746
Rotary Pumps	302	407
Rotary Shears	588	846
Rotary Slitting Shears	588	846
Round Corner Cutters	12	466
Rounders, Chair	85	626
Chair Back	73	624
Heading	10	616
Rounding and Backing Machines	3	465
Routing Machines, Electrotypers'	See 89	477
Roving Cans	94	506
Roving Frames	43	498
Rubber Belting	173	362
Rubber Covered Insulated Wire	357	227
Rubber Insulators	193	180

	Heading	Page
Rubber Machinery	144	906
Rubber Shoe Machines	144	906
Rubber Tire Machines	144	906
Ruching Machines ....See	157	912
Ruffling Machines ....See	157	912
Rug Looms	64A	502
Ruhmkorff Coils ....See	182	177
Rule Curving Machines	105	479
Rule and Lead Cutters	98	478
Rules, Keyseat	411	812
Shrink	412	812
Slide Caliper	413	812
Steel	414	813
Ruling Machines	27	468
Runner Press Drills	25	574
Saddle Seat Adzing and Shaping Machines	67	623
Safety Ball and Lever Valves	153	354
Safety Lamps, Miners'	117	552
Safety Pop Valves	154	354
Safety Set Collars	187	366
Safety Three Part Clutches	182	366
Safety Water Columns	52	319
Salt Works Machinery	145	907
Samplers, Grain	95	601
Samplers or Testers, Ore	122	553
Sand Blast Machinery	83	748
Sand Driers	58	878
Sand Grinders (Brick Machinery)	14	865
Sand Lime Brick Machinery	16	866
Sand Mixers	84	749
Sand Papering Machines	408	698
Sand Screens	152	909
Sand Sifters	85	749
Sanders	86	626
Molding	406	698
Sanders, Track	86	453
Sanding Machines ....See	408	698
Belt	407	698
Spoke	255	664
Sappers and Bolters, Shingle	212	658
Sash Cord Machinery ....See	1	490
Sash Cutter Heads	288	670
Sash, Door and Blind Machinery	409	699
Sash and Door Polishing Machines ....See	408	698
Sash Pulley Mortisers	357	685
Sash Rod Machines	410	699
Sausage Mixers	20	866
Sausage Stuffers	20	866
Saw Arbors ....See	351	683
Saw Benches	412	699
Cord Wood	413	700
Cut-Off	414	701
Piecing	103	627
Universal Saw	415	701
Saw Blades, Metal Working		
Band	415	813
Hack	416	813

	Heading	Page
Saw Blades, Woodworking	130	633
Band	131	633
Circular	132	633
Concave Circular	133	634
Cut-Off	See 132	633
Cut-Off and Equalizing	251	664
Drag	136	635
Edger	See 132	633
Gang	138	635
Hub Block Cut-Off	252	664
Inserted Tooth, Circular	134	634
Mulay	139	636
Re-Sawing	See 132	633
Segment	141	636
Shingle	142	636
Saw Dust Conveyors	193	650
Saw Filers, Band	107	628
Saw Filers' Vises	324	800
Saw Filing Clamps	143	637
Saw Filing Machines	479	824
Saw Fitting Machines	416	702
Saw Flangers	144	637
Saw Gages	317	676
Saw Grinders	167	765
Shingle	145A	637
Saw Guards	146	637
Saw Guides	194	651
Saw Gummers	147	637
Saw Gummers' Cutters	148	638
Saw Hammers	149	638
Saw Machines, Woodworking	417	702
Amateur Scroll	432	707
Band	418	702
Blocking	See 337	680
Bolting	420	703
Box Board Cut Off	58	622
Cabinet Makers'	421	703
Circular	422	704
Cross-Cut	See 424	705
Cut-Off	424	705
Dimension	425	706
Double Band	426	706
Drag	See 202	653
Edging	428	707
Foot Power Band	429	707
Foot Power Circular	430	707
Hand and Foot Power	431	707
Scroll, Amateur	432	707
Scroll and Jig	433	708
Shaping	See 337	680
Slitting	435	708
Splitting	See 435	708
Swing Cut-Off	437	709
Swing Parallel, Cut-Off	438	710
Saw Mill Carriage Rollers	See 196	651
Saw Mill Carriages	205	654
Saw Mill Dogs	209	657
Saw Mill Head Blocks	210	657

	Heading	Page
Saw Mill Machinery	163	641
Saw Mill Set Works ....See	196	651
Saw Mills	196	651
Band	197	651
Band and Circular	198	652
Circular	199	652
Cord Wood	206	655
Direct Running	207	655
Drag	202	653
Gang	203	654
Portable	208	656
Saw Set Gages	150	639
Saw Sets	151	639
Saw Setting and Filing Machines	440	711
Saw Sharpeners	152	639
Saw Stretchers	153	639
Saw Swages	154	640
Saw Tables, Metal Working	565	841
Saw Tables, Slitting ....See	422	704
Saw Tools	155	640
Saw and Dado Machines	439	710
Sawing Machines, Book	28	468
Sawing Machines, Metal		
Band	563	841
Circular	564	841
Cold ....See	564	841
Sawing Machines, Stone	166	915
Sawing and Trimming Machines, Electrotypers' ....See	89	477
Saws, Chair Back	74	624
Cut-Off and Equalizing	251	664
Heading	11	616
Hub Block Cut-Off	252	664
Miter	129	633
Stave	36	618
Veneer	128	632
Saws, Knives, Saw Tools, etc.	104	628
Saws, Metal		
Hack, Hand	417	813
Power	418	813
Scalding Machines (Canning House Machinery)	23	867
Scales and Balances	146	907
Assaying Balances	147	907
Scales, Automatic	148	907
Scales, Computing	149	908
Scales, Hopper, Platform, Wagon or Track, etc.	150	908
Scalpers, Graders, and Dressers	96	601
Scientific Instruments	151	908
Scorers, Paper Box Board	43	470
Scotch Tubular Boilers	12	296
Scrapers, Flue or Tube ....See	49	317
Scourers ....See	81	597
Scouring Machines, Leather	97	891
Scouring and Washing Machines, Cloth, etc.	57	502
Scrap Bunchers, Tobacco	183	920
Scrap Shears	586	845
Scraper Edge Turners and Blade Grinders	156	640
Scrapers, Ditching	143	906
Scrapers, Drag	143	906

	Heading	Page
Scrapers, Wheeled	143	906
Scraping Machines, Broom	18	866
Scraping Machines, Wood	441	711
Scratch Gages	386	809
Screen Plates	77	475
Screens	152	909
Screens (Flour Mill Machinery) See	72	594
Screens, Pulp	83	476
Screw Conveyors	26	530
Screw Cutting Lathes	212	774
Automatic	213	775
Screw Driving and Boring Machines	236	662
Screw Jacks	65	541
Screw Machines, Automatic	235	782
Screw Pitch Gages	387	809
Screw Plates	419	814
Screw Presses	532	835
Screw Punches	549	838
Screw Shaving Machines	236	782
Screw Slotting Machines	248	785
Screw Thread Calipers	344	803
Screw Thread Gages	388	809
Screws, Jack	397	810
Machine	297	795
Scribers	420	814
Scroll Saw Machines, Amateur	432	707
Scroll and Jig Saw Machines	433	708
Scroll Shears	587	845
Scutchers See	7	491
Sealing Machines, Envelopes	63	881
Seals, Freight Car See	22	440
Seaming Machines, Double	566	842
Seaming Presses See	521	832
Seaming and Corrugating Machines	474	824
Seaming and Wiring Machines	567	842
Search Lights	287	205
Seasoning Machines, Hide	99	892
Seat Facing Machines, Valve	126	342
Seat Notching Machines	87	626
Seat Shaping Machines See	67	623
Section Liners	404	811
Seed Sorters	63	590
Seed Sowers	64	590
Segment Saw Blades	141	636
Segments, Commutator See	97	153
Self-Closing Switches	316A	216
Self Feed Rip-Saw Machines	401	696
Self-Oiling Bearings See	255	786
Sensitive Drills	136	758
Separators		
Cream	46	875
Foundry	86	749
Grain See	81	597
Magnetic (Flour Mill Machinery)	100	601
Oil See	283	792
Ore	124	553
Ore, Magnetic	125	554

	Heading	Page
Separators, continued.		
Steam	128	342
Thread	95	507
Separators and Threshing Machines	67	592
Service Boxes, Electric ..See	101	155
Sets, Portable Testing ..See	333	222
Set-Over Lathes ..See	186	770
Setters, Bit	354	684
Setters, Shoe Tip	158	912
Setters, Tire ..See	38	742
Setting Down Machines, Tinsmiths'	614	850
Setting and Filing Frames, Band Saw	108	629
Setting Indicators, Log ..See	210	657
Setting-Up Forms	28	618
Setting-Up Machines	60	622
Sewer Pipe Machinery	153	910
Sewer Pipe Presses	153	910
Sewing and Finishing Machines, Knit Goods	26	495
Sewing Machine Attachments	157	912
Sewing Machines	154	911
Broom	18	866
Factory	155	911
Household	156	911
Shackle Hooks	68	542
Shade Holders	289	205
Shade Roller Labeling Machines	94	890
Shades, Globes, etc.	163	173
Shaft Oilers	213	377
Shaft and Pole Machinery	389	693
Shafting	229	383
Flexible	230	384
Shafting Bearings	162	357
Shafting Lathes	215	775
Shake Willows ..See	54	501
Shaking Grates	84	329
Shakers, Milk and Egg	38	871
Shaper Attachments	237	782
Shaper Cutter Heads	444	712
Shaper Tools	311	798
Shaper, Vises	325	800
Shapers, Metal	238	783
Crank	239	783
Draw Cut	240	783
Friction	241	783
Gear	242	783
Geared	243	784
Traverse or Traveling Head	244	784
Shapers, Wood ..See	372	688
Foot Power	443	712
Swage	158	641
Shaping and Moulding Machines, Edge	372	688
Shaping Machines, Chair Seat ..See	67	623
Saddle Seat	67	623
Saw ..See	337	680
Sharpeners, Saw	152	639
Sharpening Machines, File	368	806
Shavers, Beef	20	866
Shavers, Ice	38	871

	Heading	Page
Shavers, Spoke	253	664
Shaving Machines, Electrotypers' See	89	477
Shaving Machines, Screw	236	782
Shaving Machines, Spoke	254	664
Shavings and Dust Fans See	65	881
Shear, Punch and Angle Bender, Combined	592	847
Shearing Machines	245	784
Shearing, Coping and Punching Machines	553	839
Shearing and Punching Machines	555	839
Shears	568	842
Alligator	569	842
Bar	570	842
Bench See	582	844
Bevel	572	843
Bloom and Billet	573	843
Circle	574	843
Clipping	575	843
Double Angle	576	843
Doubling, Tin Plate	577	843
Gap	578	844
Gate	579	844
Guillotine See	579	844
Hand	581	844
Lever	582	844
Plate	583	845
Power	584	845
Rotary See	588	846
Scrap	586	845
Scroll	587	845
Slitting, Rotary	588	846
Squaring	589	846
Tin Plate, Doubling	577	843
Universal or Splitting	590	846
Vertical or Upright	591	847
Shears, Binders'	29	468
Table	30	468
Sheaves, Rope See	222	380
Sheet-Metal Brushes	57	146
Shell Grinding Mills	44	874
Shellers, Corn	60	589
Shellers, Rice	142	905
Shifter Forks and Devices	232	384
Shifting Mechanism, Clutch	184	366
Shingle Bolters and Sappers	212	658
Shingle Jointers	213	658
Shingle Knives	120	631
Shingle Machines	215	659
Shingle Packers	216	659
Shingle Planers	217	660
Shingle Saw Blades	142	636
Shingle Saw Grinders	145A	637
Ship Deck Pumps	292	401
Shipping Tag Machines See	20	467
Shockers	61	590
Shoe Box Framing Machines	49	620
Shoe Drills	26	575
Shoe Lace Machinery See	1	490
Shoe Machinery	158	912

	Heading	Page
Shoe Machinery Accessories	159	913
Shoe Machines, Rubber	144	906
Shoes, Brake	8	437
Shop Saws	See 417	813
Shovel Machinery	593	847
Shovels, Steam	57	878
Shredders, Corn	37	580
Fodder	17	571
Shrink Rules	412	812
Shrinkers, Tire	38	742
Shuttle Checks	96	507
Shuttles, Spools, Bobbins, etc	72	503
Side Bearings	See 3	435
Side Files	157	640
Sieves	101	602
Sifters	See 72	594
Sifters, Flour	5	860
Sight Feed Oil Cups	97	334
Signal Systems, Fire Alarm, Manual	291	205
Fire Alarm, Thermostatic	292	206
Police	293	206
Signaling Apparatus, Mine	126	554
Railway	76	451
Signals, Steamship	294	207
Street Railway	295	207
Signature Bundling Machines	See 23	467
Signature Presses	23	467
Signs, Illuminated, Electric	296	207
Silk Looms	68	503
Silk Machinery	45A	499
Single Arm or Plain Pulleys	224	381
Single Fly-Wheel Vacuum Pumps	323	417
Single Vacuum Pumps	322	416
Sizers, Fur	81	886
Sizers, Timber	See 386	692
Turners'	348	683
Sizing Machines (Brick Machinery)	14	865
Sizing Machines, Broom	18	866
Sizing Machines, Stock	60A	622
Skein Winders	49	500
Slab Slashers	220	660
Slab and Log Conveyors	175	645
Slasher Combs	97	507
Slashers, Slab	220	660
Slat Cutting Machines	61	622
Slaters' and Carvers' Tools	166	915
Sleeve Couplings	196	370
Sleeve Ironers	95	890
Slide Caliper Rules	413	812
Slide Rests	296	795
Slitters, Rubber Belt	144	906
Slitting Machines, Metal	594	847
Gang or Multiple	595	847
Slitting Machines, Paper	53	471
Slitting Saw Machines	435	708
Slitting Saw Tables	See 422	704
Slitting Shears, Rotary	588	846
Slitting and Reeling Machines, Cloth	58	502

	Heading	Page
Slitting and Rewinding Machines, Paper	54	471
Slotters, Spool	78	475
Slotting Machines, Metal Working	246	784
Die	247	785
Nipple and Screw	12	740
Screw	248	785
Slug Casting Machines	120	480
Smashing Presses	24	467
Smelting Furnaces	80	886
Smoothing Irons, Electric...See	174	175
Smoothing Machines, Cloth Case	8	465
Smoothing Rolls	596	847
Smutters ...See	81	597
Snag Handle Borers	94	627
Snap, Push Button or Flush Switches	314	214
Snow Plows and Flangers	75	451
Soap Dies	161	914
Soap Machinery	160	914
Soap Pumps	303	408
Socket Wrenches	452	821
Sockets, Drill	421	814
Grip	422	814
Oil Feed	423	814
Taper	424	814
Sockets, Incandescent Lamp	299	208
Miniature Lamp	300	209
Soil Pulverizers	7	567
Solder Cutters	597	847
Solder Molds	598	848
Soldering Frames and Cylinders	599	848
Soldering Irons, Electric...See	174	175
Soldering Machines	600	848
Sole Cutting Machines	158	912
Sole Leather Rolling Machines	97	891
Sole Levelers	158	912
Sorters, Potato	62	590
Seed, Bean, etc	63	590
Sound Proof Telephone Booths	44	144
Sowers, Seed	64	590
Spargers, Revolving (Brewery Machinery)	12	864
Spark Arresters, Arc Lamp	302	209
Spark Coils	303	209
Speaking Tube Machines...See	617	850
Special Insulators, Line Materials, Line Fittings, etc	217	187
Special Sewing Machines	157	912
Speed Indicators...See	54	320
Speed Lathes	216	775
Speed Transmission Devices	233	385
Spice Mills	44	874
Spike Pullers...See	88	454
Spiked Road Rollers	143	906
Spindle Boring Machines	275	668
Spindle Carving Machines...See	278	669
Spindle Moulding and Shaping Machines and Attachments	373	688
Spindles, Spinning	98	507
Spinning Cylinders	99	507
Spinning Frames	44	498

	Heading	Page
Spinning Jennies	See 7	491
Spinning Lathes	217	776
Spinning Mules	40	498
Spinning Rings	100	507
Spinning Tubes	101	507
Spinning and Preparing Machines	7	491
Spiral Conveyors	26	530
Spiral Jaw Couplings	197	371
Spiral Moulding Machines	370	688
Spiral Riveted Pipe	105	337
Splicing Clamps, Wire	See 106	157
Splining or Keyseat Gages	389	809
Split Pulleys	225	381
Splitting Machines, Leather	97	891
Splitting Saw Machines	See 435	708
Splitting Shears	590	846
Spoke Facing Machines	241	663
Spoke Heading Machines	16	740
Spoke Lathe Knives	See 116	630
Spoke Lathes	245	663
Spoke Sanding Machines	255	664
Spoke Shavers	253	664
Spoke Shaving Machines	254	664
Spoke Tenon Compressing Machines	237	662
Spoke Tenoning Machines	256	664
Spoke Thread Rolling Machines	18	741
Spoke Threading Machines	17	741
Spoke Throating Machines	257	665
Spongers, Cloth	59	502
Spool Slotters	78	475
Spoolers	52	501
Spoolers, Wire	648	854
Spools, Shuttles, Bobbins, etc	72	503
Spraying Machines, Paint	126	900
Spreaders, Ballast	66	449
Spreading Machines, Glue	321	677
Spring Calipers	345	803
Spring Hammers	494	827
Spring Jacks and Cut Outs	See 324	218
Spring Machinery, Car	468	823
Spring Testers	179	919
Springs, Car, etc	50	446
Springs, Electrical	298	208
Sprocket Wheel Chains	19	528
Sprocket Wheels	240	387
Sprue Cutters	601	848
Square Jaw Couplings	198	371
Squares		
Caliper	425	815
Center	426	815
Combination	427	815
Draughtsmen's T	428	815
Standard	429	815
Try	430	815
Squaring Machines	239	662
Squaring Shears	589	846
Squeezers	See 11	491
Squeezing Machines	602	848

	Heading	Page
Stabbing Machines, Paper	32	468
Paper Drills	33	468
Stackers	65	591
Stackers, Lumber	187A	649
Stage Arc Lamps	207	184
Stair Gages	390	809
Stalk Cutters	16	571
Stamp Mills	119	553
Stamping Machines, Selvedge	60	502
Stamping Presses, Book Binders' ... See	21	467
Stamping Presses, Metal ... See	520	831
Stamps, Hosiery	102	507
Stand Pipes, Railway ... See	92	455
Standard Flat Riveted Keys	399	810
Standard Squares	429	815
Standard Wrenches	453	821
Standing Presses	25	467
Stands, Floor	234	385
Mule	235	386
Staple Machines, Wire	649	854
Starch Cookers	95	890
Starch Extractors, Laundry	95	890
Starch Grinding Mills	44	874
Starch Mangles ... See	11	491
Starching Machines	95	890
Starters, Motor ... See	281	204
Starting Boxes ... See	281	204
Static Machines	306	210
Static Transformers	338	223
Stationary Tubular Boilers, Horizontal ... See	6	275
Vertical ... See	6	275
Stave Buckers	29	618
Stay-Bolt Clippers	45	743
Stay-bolt Cutters	49	744
Stay-bolt Taps	443	819
Stave Cutters	30	618
Stave Dressers ... See	29	618
Stave Equalizers	32	618
Stave Jointers	33	618
Stave Packers	34	618
Stave Planers	35	618
Stave Saws	36	618
Steak Tenderers	20	866
Steam Appliances	45	316
Steam Automobiles	119	898
Steam Board Lifters	222	660
Steam Blow-Off Tanks	133	343
Steam Carriage Feeds	224	661
Steam Cant Trips	223	660
Steam Clamps	47	317
Steam Condensers	53	319
Steam Drills	110	552
Steam Economizers	56	320
Steam Engine Governors	78	328
Steam Engine Indicators	87	331
Steam Gages	72	325
Steam Hammers	495	827
Steam Locomotives	46	445

	Heading	Page
Steam Log Turners	225	661
Steam Meters	110	894
Steam Plows	53	587
Steam Pumps	304	408
Duplex	305	411
Jet	306	412
Vertical	307	412
Steam Separators	128	342
Steam Shovels	57	878
Steam Tillers	104	893
Steam Traps	136	344
Steamers, Barrel	37	619
Steamers, Wheat	See 76	596
Steaming and Soaking Tanks, Bottlers'	9	862
Steamship Signals	294	207
Steel Balls	253	786
Steel Clamps	352	804
Steel and Iron Wire, Galvanized	359	228
Steel Plate Printing Presses	112	480
Steel Pipe, Riveted	104	337
Steel Roofing Machines	562	841
Steel Rules	414	813
Steel Straight Edges	See 414	813
Steel Tapes	433	816
Steel Triangles	447	820
Steering Engines	See 34	310
Marine	34	310
Stencil Cutting Machines	162	914
Stenciling Machines	447A	712
Stereopticons	163	914
Stereotype Plate Machines	90	477
Stereotyping and Electrotyping Machinery	89	477
Sterilizers, Milk and Cream	46	875
Sterilizing Apparatus	164	914
Sterilizing Washing Machines	165	915
Sticks, Dye	81	505
Stippling Machines	447A	712
Stitched Belting	168	360
Stitching Machines, Book	See 34	468
Wire	35	468
Stock Sizing Machines	60A	622
Stock Vats, Brewers'	12	864
Stocks, Mortisers'	367	687
Stocks, Ratchet	431	815
Stocks and Dies	432	816
Stokers, Mechanical	129	343
Stone Crushers	See 43	873
Stone Turning Lathes	218	776
Stone Working Machinery and Tools	166	915
Stoning Machines, Leather	97	891
Stop Motions, Loom	90	506
Stops, Engine	130	343
Stops, Log	183	647
Stops, Paper	76	475
Stoppers, Glass	84	887
Storage Battery Switches	318	217
Storage Batteries	28	142
Storage Tanks, Brewers'	13	864

	Heading	Page
Store Trucks	75	544
Stove Pipe and Elbow Machines	603	848
Stove Plate Grinding Machines	168	765
Straddle Fittings.....See	110	337
Straight Bed Knitting Machines	31	496
Straight Sided Presses	534	836
Straighteners, Wire	650	854
Straightening and Cutting Machines, Automatic	651	854
Straightening, Measuring, Forming and Cutting Machines	652	854
Straightening Machines, Metal	604	848
Plate	605	849
Rail	606	849
Wire	650	854
Straightening and Bending Machines	463	822
Straightening and Ripping Machines	403	697
Strap Punching and Cutting Machines	88	889
Strapping Machines	62	623
Strapping and Polishing Machines, Belt.....See	465	823
Street Car Controllers	107	157
Street Car Gongs	165	174
Street Cleaning Machinery	167	915
Street Lamp Fixtures and Hoods	143	168
Street Railway Motors, Electric	236	195
Street Railway Passenger Cars	32	442
Street Railway Signals	295	207
Street Railway Track Cleaners	83	453
Sand Blast	84	453
Stretchers, Carpet	26	868
Stretchers, Cloth	45B	499
Stretchers, Jacket	79	475
Stretchers, Rubber Belt	144	906
Stretchers, Saw	153	639
Stretchers, Toe and Instep	159	913
Stucco Machinery	168	916
Stud Lathes.....See	184	770
Stuffers, Ham	20	866
Stuffers, Sausage	20	866
Stuffing Mills (Tanners' Machinery)	99	892
Stump Pullers	57	587
Sub-Presses	535	836
Submarine Arc Lamps	208	184
Submarine Cables	72	150
Sugar Machinery	169	916
Sulphite Pulp Machinery	84	476
Superheaters	132	343
Surface Gages	391	809
Surface Grinding Machines	169	765
Surfacers.....See	379	690
Surfacing Machines, Stone	166	915
Surfacing and Polishing Machines, Door	446	712
Surgical Instruments	170	917
Veterinary	171	917
Surveying Instruments.....See	151	908
Suspension Cableways	10	526
Suspension Drills	137	759
Swages, Saw	154	640
Swage Shapers	158	641

	Heading	Page
Swaging Machines, Sheet Metal	608	849
Wire	653	855
Swing Cranes	38	533
Swing Cut Off Saw Machines	437	709
Swing Drills	138	759
Swing Frame Grinding Machines	170	766
Swing Parallel, Cut-Off Saw Machines	438	710
Switch Boxes, Open and Concealed and Marine	47A	145
Switch Locks	80	452
Switch Stands	81	452
Switchboards, Light and Power	308	211
Telephone	309	213
Switches, Electric	310	214
Ammeter	See	217
Clock	90	152
Door, Automatic	312	214
Fixture or Chandelier	313	214
Flush, Push Button or Snap	314	214
High Voltage	315	215
Knife	316	215
Self-Closing	316A	216
Snap	317	216
Storage Battery	318	217
Time	See	90 152
Track, Automatic	319	217
Voltmeter	320	217
Switches and Signaling Apparatus, Railroad	76	451
Fusees	See	79 452
Signals	78	452
Switch Locks	80	452
Switch Stands	81	452
Switches	82	452
Torpedoes	79	452
Syphon Pumps	283	398
"T" Squares, Draughtsmen's	53	877
Table Leg Machines	447	712
Table Shears	30	468
Tables, Dump	14	865
Tables, Brazing	2	739
Edging	300	673
Edging and Slitting	301	674
Rib-Saw	See	422 704
Saw	565	841
Saw Brazing	112	630
Slitting Saw	See	422 704
Tables, Turn and Transfer	91	454
Tablet Boards	See	242 196
Tablet Machines	127	900
Tabulators, Electric	322	218
Tack Machines	654	855
Tackle Blocks	3	524
Tag Machines, Shipping	See	20 467
Take-Ups	237	386
Take-Up and Pay Out Wire Reels	267	201
Tallow Testers, Tanners'	100	892
Tallying Machines	See	97 478
Tan Presses	99	892
Tanks	172	917

	Heading	Page
Tanks, Steam, Blow-Off	133	343
Tanks, Steaming and Soaking	9	862
Tanners' Machinery	99	892
Tanners' Machinery Accessories	100	892
Tap Holders	289	793
Tap Removers	299	795
Tap Wrenches	454	821
Tape Cutters, Piano	129	901
Tape, Insulating	323	218
Taper Sockets	424	814
Tapes, Steel	433	816
Tapestry Printing Drums	103	507
Tappers, Nut	62	746
Automatic	63	746
Geared	64	746
Rotary	65	746
Two Spindle	66	746
Tapping Attachments	249	785
Tapping Chucks	271	789
Tapping Machines	250	785
Nipple	See 10	739
Pipe	251	786
Taps.		
Bicycle	434	816
Bit Brace	435	816
Boiler Makers'	436	817
Hand	437	817
Hob	438	817
Machine Screw	439	818
Master	440	818
Patch Bolt	441	818
Pipe	See 444	819
Pulley	442	818
Stay-bolt	443	819
Taps and Reamers, Pipe	444	819
Tedders	66	592
Telegraph Apparatus, District	121	161
Telegraph Apparatus, Quadruplex and Duplex	See 324	218
Telegraph Instruments and Apparatus	324	218
Wireless	324A	218
Telegraph Keys	See 324	218
Telegraphic Cut-Outs and Plugs	See 324	218
Telemeters	See 226	190
Telemotors (Marine Machinery)	104	893
Telephone Booths, Sound Proof	44	144
Telephone Boxes and Backboards	48	145
Telephone Cable Terminals	67	149
Telephone Drops	See 309	213
Telephone Line Poles	252	198
Telephone Line Protectors	260	200
Telephone Receivers	See 328	219
Telephone Switchboards	309	213
Telephones	328	219
Telephones, Interior, Intercommunicating	329	221
Tell-Tale Floats, Electrical	See 146	171
Telpherage Systems, Electric	331	222
Temperature Regulators	123	341
Temperers, Wheat	See 76	596

	Heading	Page
Tempering Machines, Clay	32	869
Tenderers, Steak	20	866
Tenoning Knives	122	631
Tenoning, Cutting Off and Rim Dressing Machines	238	662
Tenoning Machines	448	712
Car	449	713
Chair Back	75	624
Double End	450	713
Hand	451	713
Rocker	89	626
Spoke	256	664
Tentering Machines...See	11	491
Terminals, Telephone Cable	67	149
Terminals and Connections, Wire	103	156
Test Indicators	396	810
Test Pumps	308	412
Boiler	309	413
Hydraulic	310	413
Inspectors'	311	413
Testers, Dairy	46	875
Testers, Grain...See	95	601
Testers, Tallow	100	892
Testers or Samplers, Ore	122	553
Testing Apparatus, Cable...See	333	222
Testing Apparatus, Glue	322	677
Testing Instruments, Electric	333	222
Testing Machines	173	918
Cement	174	918
Chain	175	919
Cloth	61	502
Hydraulic	176	919
Metal	609	849
Paper	177	919
Pipe	178	919
Spring	179	919
Twine	8	491
Wire	180	919
Testing Sets, Portable, Electric...See	333	222
Textile Machinery	10	491
Textile Machinery Accessories	71	503
Theatre-Dimming Rheostats	282	204
Theatre Dimmers...See	282	204
Thermo-Electric Generators	161	172
Thermometers, Recording	134	344
Thermostatic Fire Alarm Signal Systems	292	206
Thin Hoop Drivers	5	615
Third Rail Insulators	193A	180
Thrashing Barrels...See	87	749
Thread Calipers	346	804
Thread Cutting Tools	312	798
Thread Stitching Machines	34	468
Threading Machines, Bolt	67	746
Pipe...See	501	828
Spoke	17	741
Three Part Safety Clutches	182	366
Thresher Feeders	27	575
Threshing Machines and Separators	67	592
Throaters, Handle...See	337	680

	Heading	Page
Throating Machines, Spoke	257	665
Throttle Valves	155	355
Throttling Engines	41	313
Thumb or Hand-Hole Machines, Automatic	64	623
Tie Plate Gages	89	454
Tie Plates	73	451
Tight and Loose Pulleys	226	382
Tighteners, Belt	178	364
Tile Machinery	181	919
Tillers, Steam	104	893
Timber Gaining Machines	227	661
Timber Framing Machines, Mining	189	649
Timber Gages	318	677
Timber Planers	386	692
Timber Sizers	See 386	692
Time Detector Systems, Watchmen's	344	224
Time Recording Systems, Automatic	182	919
Time Switches	See 90	152
Time Systems, Electric	336	223
Tin Plate Doubling Shears	577	843
Tinsmiths' Machinery	610	849
Burring Machines	611	849
Elbow Edging Machines	612	849
Rim Machines	613	849
Setting Down Machines	614	850
Trimming Machines	615	850
Trimming and Beading Machines	616	850
Tube Forming Machines	617	850
Turning Machines	618	850
Tip Setters, Shoe	158	912
Tipples, Mine	127	554
Tire Benders	33	742
Tire Bolt Holders	34	742
Tire Machines, Rubber	144	906
Tire Markers	See 38	742
Tire Measuring Wheels	36	742
Tire Setters	See 36	742
Tire Shrinkers	38	742
Tire Truing Machines	258	665
Tire Upsetters	See 38	742
Tire Welding Machines	40	743
Tires, Car Wheel	51	446
Tobacco Machinery	183	920
Tobacco Presses	140	905
Toe and Instep Stretchers	159	913
Tongs, Brazing	113	630
Tongs, Pipe	445	819
Tonguing and Grooving Knives	See 116	630
Tonguing and Grooving Machines	See 387	692
Tool Grinding Machines	171	766
Tool Holders	290	793
Tool Racks	See 285	792
Tools, Band Saw	109	629
Saw	155	640
Tools, Carders'	75	504
Tools, Commutator Turning	99	154
Linemen's Construction	106	157

	Heading	Page
Tools, Metalworking	300	795
Boring	301	795
Box	302	796
Cutting-Off	303	796
Diamond	304	796
Diamond, Hand	354	805
Forming	305	796
Inserted Cutter, Lathe	309	797
Knurling	307	796
Lathe	308	797
Milling, Hollow	306	796
Planer	310	797
Shaper	311	798
Thread Cutting	312	798
Tools, Miners'	128	554
Tools, Molders'	33	870
Tools, Morocco	98	891
Tools, Track	87	453
Tools, Well Drilling	193	923
Tooth Harrows	30	576
Topping Machines, Paper Box	40	469
Torpedoes, Railroad	79	452
Tote Pans	See 285	792
Touring Cars, Motor Driven	116	895
Tow and Waste Machinery	9	491
Towers, Water Cooling	135	344
Toy Motors, Electric	233	192
Track Bolt Cutters	50	744
Track Cleaners, Street Railway	83	453
Sand Blast	84	453
Track Drills	362	806
Track Gages	89	454
Track Jacks	66	542
Track Laying Machines	85	453
Track Sanders	86	453
Track Scales	150	908
Track Switches, Automatic	319	217
Track Throwing Machines	90	454
Track Tools	87	453
Claw Bars	88	454
Gages, Track and Tie Plate	89	454
Tracks, Portable	89	549
Traction Engines	42	314
Trailer Connectors	104	156
Trammel Points, Draughtsmen's	53	877
Trammels, Extension Beam	446	820
Tramways and Trolleys	69	542
Transfer Tables	91	454
Transformers, Static	338	223
Transmission Line Poles	252	198
Transmission Rope	228	383
Transmitters	See 328	219
Transplanting Machines	68	593
Traps, Steam	136	344
Travelers, Ring	93	506
Traveling Cranes	39	533
Traveling Head Planers	231	781
Traveling Head Shapers	244	784

	Heading	Page
Traverse Shapers	244	784
Tread Powers	69	593
Treads or Buttons, Floor ... See	261	200
Tree Insulators	194	180
Triangles, Draughtsmen's	53	877
Triangles, Steel	447	820
Trimmers, Broom	18	866
Trimmers, Lumber	188	649
Trimmers and Binders, Lath	168	642
Trimming Machines		
Book	36	469
Brush	19	866
Paper Box	48	470
Stone	166	915
Tinsmiths'	615	850
Wood ... See	65	623
Trimming and Beading Machines, Tinsmiths'	616	850
Trimming and Sawing Machines, Electrotypers' ... See	89	477
Trimming Presses	536	836
Triple Expansion Engines	43	315
Triplex Power Pumps	301	407
Trippers, Belt Conveyor	238	386
Triturators, Dry Paint	125	900
Powder	127	900
Trolley Bases	22	139
Trolley Forks	150	171
Trolley Hoists	58	540
Trolley Poles	253	199
Trolley-Wire Splicing Connectors	105	157
Trolleys and Tramways	69	542
Troughs, Dough	5	860
Truck Bolsters	5	436
Trucks, Car and Locomotive	52	446
Electric Car	53	447
Trucks	70	543
Baggage	71	543
Brick and Clay	72	543
Foundry	73	543
Logging and Lumber	74	544
Store, Warehouse and Factory	75	544
Wire Mill	76	545
Truing Device, Grindstone	174	767
Truing Machines, Tire	258	665
Trussing Machines ... See	13	616
Try Squares	430	815
Tub or Pail Lathes	100	627
Tub and Pail Machinery	90	626
Tube Bending Machines	460	822
Tube Calipers	46A	316
Tube Cleaners, Boiler	49	317
Tube Expanders, Boiler	60	322
Tube Forming Machines	617	850
Tube Mill Machinery	504	828
Tube Rolling Machines, Paper	46	470
Tube Scrapers ... See	49	317
Tubes, Cop	78	504
Tubes, Crooke's or Geissler	341	224
Tubes, Porcelain and Clay ... See	342	224

	Heading	Page
Tubes, Spinning	101	507
Tubes, Wiring	342	224
Tubing Machines, Rubber	144	906
Tubs, Brewers' Fermenting	12	864
Tubular Boilers	6	275
Horizontal, Portable ..See	6	275
Horizontal Stationary..See	6	275
Locomotive	9	290
Marine	10	292
Return Tubular	11	295
Scotch	12	296
Vertical Portable..See	6	275
Vertical Stationary..See	6	275
Tumbler Washing Machines	184	920
Tumbling Barrels	87	749
Turbine Engines	43A	315
Turbine Water Wheels	192	922
Turn and Transfer Tables	91	454
Turnbuckles	54	447
Turners, Cloth	28	495
Turners, Handle	95	627
Heading	12	616
Heading, Automatic	96	627
Log	184	647
Steam Log	225	661
Turners' Sizers	348	683
Turners, Scraper Edge and Blade Grinders	156	640
Turning Machines, Tinsmiths'	618	850
Turning Tools, Commutator	99	154
Turpentine Distilling Apparatus	51	877
Turntables ..See	91	454
Turret Drills	139	759
Turret Lathes	220	777
Chucking	221	777
Tuyeres	41	743
Twine Balling Machines	3	490
Twine Machinery	4	490
Twine Testing Machines	8	491
Twist Drills	281	791
Twisters	45	499
Twisters and Layers, Paper Twine	6	490
Twisters, Wire	657	855
Two Flue Boilers..See	2	274
Two Revolution Printing Presses..See	108	479
Two Spindle Nut Tappers	66	746
Type Casting and Setting Machines	121	480
Type High Numbering Machines	93	477
Type Setting Machines	118	480
Individual Type	119	480
Slug Casting	120	480
Type Casting and Setting	121	480
Typewriting Machines	185	920
Underground Conduits	102	155
Unhairing Machines	99	892
Universal Bevels	331	802
Universal Chucks..See	267	788
Universal Grinding Machines	172	767
Universal Jig Vises	326	800

	Heading	Page
Universal Joint Couplings	199	371
Universal Joints	292	794
Universal Milling Machines	225	779
Universal Saw Benches	415	701
Universal or Splitting Shears	590	846
Universal Wood Workers	454	713
Unloaders, Ballast	See 55	447
Unmounted Gongs	166	174
Upright or Vertical Drills	140	759
Upright or Vertical Shears	591	847
Upsets	See 154	640
Upsetters, Tire	See 38	742
Upsetting, Heading and Forging Machines	56	745
Vacuum Gages	73	325
Vacuum Pumps	312	414
Automatic Steam	313	414
Crank and Fly Wheel	314	415
Duplex	315	415
Duplex Fly Wheel	316	415
Duplex and Single Actuated	317	415
Power	318	416
Power Vertical Duplex	319	416
Single	322	416
Single Fly Wheel	323	417
Vertical Triplex	321	416
Valve Reseating Machines	125	342
Valve Seat Facing Machines	126	342
Valves	137	345
Air Automatic	138	345
Back Pressure	139	346
Balance	140	347
Blow-Off	141	347
Check	142	348
Chronometer	143	349
Float	144	349
Foot	145	349
Gate	146	350
Globe	147	351
Hydraulic	148	352
Pop	See 154	354
Pump	150	352
Radiator	151	353
Reducing	See 122	341
Safety Ball and Lever	153	354
Safety, Pop	154	354
Throttle	155	355
Water Relief	156	355
"Y"	157	356
Variable Feed Rip-Saw Machines	402	697
Variety Lathes	341	681
Variety Moulding Machines	See 372	688
Varnish Makers' Machinery	186	921
Varnishing and Lacquering Machines	187	921
Vats, Brewers'	13	864
Vats, Dairy	46	875
Vehicles, Motor	113	894
Velocipede Cars	See 29	441
Vending Machines, Coin Operated	188	921

	Heading	Page
Veneer Knives	124	632
Veneer Machines	455	714
Clipping	456	714
Cutting	457	714
Drying	458	714
Veneer Presses	459	714
Veneer Saws	128	632
Ventilating Fans	65	881
Vernier Calipers	347	804
Vertical Air Pumps, Marine	293	401
Vertical Boring Machines	96	750
Vertical Centrifugal Pumps	261	393
Vertical Engines	44	315
Vertical Duplex Vacuum Pumps	319	416
Vertical Milling Machines	226	780
Vertical Mortising Machines	See 358	685
Vertical Piston Marine Pumps	294	401
Vertical Single Vacuum Pumps	320	416
Vertical Steam Pumps	307	412
Vertical Triplex Vacuum Pumps	321	416
Vertical Tubular Boilers, Portable	See 6	275
Stationary	See 6	275
Vertical or Upright Drills	140	759
Vertical or Upright Shears	591	847
Vestibules, Car	23	440
Veterinary Surgical Instruments	171	917
Vinegar Machinery	189	922
Vise Couplings	200	372
Vises	313	798
Bicycle	314	798
Blacksmiths'	315	798
Chipping	316	798
Drill	317	798
Machinists'	318	798
Milling Machine	319	799
Off-Set	320	799
Pin	321	799
Pipe	322	799
Planer	323	800
Saw Filers'	324	800
Shaper	325	800
Universal Jig	326	800
Vises, Broom	18	866
Vises, Woodworkers'	160	641
Band Saw Filing	See 108	629
Pattern Makers'	162	641
Voltage, Current and Pressure Registers	270	202
Voltage Switches, High	315	215
Voltmeter Switches	320	217
Voltmeters	See 226	190
Voting Machines	190	922
Vulcanizers, Dentists'	47	876
Vulcanizers, Rubber	144	906
Waffle Cutters	38	871
Wagon Jacks	67	542
Wagon Loaders	143	906
Wagon Scales	150	908
Wall Brackets	166	359

	Heading	Page
Wall Frames or Boxes	204	372
Wallpaper Machinery	122	480
Warehouse Trucks	75	544
Warmers, Foot, Electric	See 174	175
Warpers	See 48	500
Washer Machines	68	747
Washers, Bottle	9	862
Washers, Mold	14	865
Washers, Ore	129	554
Washing Machines, Cylinder	95	890
Washing Machines, Dish	48	876
Washing Machines, Tumbler	184	920
Washing and Beating Engines	60	472
Washing and Scouring Machines	57	502
Waste Machinery	9	491
Watchmen's Clocks	See 344	224
Watchmen's Registers	See 344	224
Watchmen's Time-Detector Systems	344	224
Water Columns, Plain	51	318
Safety	52	319
Water Columns, Railway	92	455
Water Cooling Towers	135	344
Water Filters	67	882
Water Elevators	See 46	536
Water Gages	74	325
Water-Level Indicators	See 146	171
Water Meters	111	894
Water Motors	44D	316
Water Relief Valves	156	355
Water Softening Apparatus	68	883
Water Tube Boilers	15	298
Marine	See 15	298
Water Wheel Governors	79	328
Water Wheels	191	922
Turbine	192	922
Wattmeters	See 226	190
Wattmeters, Recording	See 265	201
Weavers, Wire	658	855
Wire Fence	659	855
Weaving Machinery	62	502
Jacquard Machines	62A	502
Looms	63	502
Weather Proof Insulated Wire	358	227
Web Perfecting Printing Presses	114	480
Wedge Couplings	201	372
Weeding Machines	70	594
Weighing Machines	1	566
Welding Machines, Electric	348	225
Flue	158	356
Sheet Metal	620	850
Tire	40	743
Well Sinking Machines	See 193	923
Wet Grinding Pans	115	552
Wet Machines	85	476
Wet and Dry Pans (Clay Working Machinery)	32	869
Wheat Steamers	See 76	596
Wheat Temperers	See 76	596
Wheatstone Bridges	See 333	222

	Heading	Page
Wheel Bolting and Capping Machines	233	662
Wheel Boring and Boxing Machines	235	662
Wheel Boring and Screw Driving Machines	236	662
Wheel Box Presses	248	664
Wheel Dressers	327	800
Wheel Facing Machines	242	663
Wheel Grinders, Band Saw	110	629
Wheel Machinery	230	662
Wheel Mills (Gunpowder Machinery)	87	888
Wheel Polishing and Finishing Machines	247	663
Wheeled Scrapers	143	906
Wheels, Car, etc	56	447
Emery, Corundum and Carborundum	328	801
Disk	See 408	698
Foot	370	807
Reducing	118	340
Rope Transmission	239	386
Sprocket	240	387
Tire Measuring	36	742
Water	191	922
Whip Braiding Machines	See 1	490
Whirlers, Bench	131	901
Whirlers, Decorating	131	901
Whistles, Chime	159	356
Plain	160	357
Whitening Machines, Leather	97	891
Winches and Windlasses	77	545
Winders, Paper	86	476
Winders (Textile Machinery)	46	499
Balling Machines	47	499
Beaming Machines	48	500
Bobbin Winders	48A	500
Cop and Skein	49	500
Quillers	50	500
Reels	51	500
Spoolers	52	501
Warpers	See 48	500
Winders, Wire	660	855
Winding Drums	241	387
Winding Machines, Broom	18	866
Windlasses	39	619
Windlasses and Winches	77	545
Windmill Pumps	324	417
Windmills	194	924
Window Frame Pocket Cutters	289	670
Window Opening Devices	195	925
Wine and Cider Presses	141	905
Wire, Aluminum	352	225
Bare Copper	353	225
Fuse	354	226
Insulated, Annunciator and Office	355	226
Insulated Magnet	356	227
Insulated, Rubber Covered	357	227
Insulated, Weather Proof	358	227
Iron and Steel, Galvanized	359	228
Resistance	360	228
Wire, Annunciator	355	226
Wire Bail Formers	634	852

	Heading	Page
Wire Bakers	622	850
Wire, Bare Copper	353	225
Wire Bed Spring Machines	See 658	855
Wire Buckle Tongue Machines	623	850
Wire Bull Blocks	624	851
Wire Chisels	625	851
Wire Coilers	626	851
Wire Connections and Terminals	103	156
Wire Cutters	627	851
Hand	628	851
Wire Cutters and Bail Formers	629	851
Wire Cutting and Milling Machines, Automatic	630	851
Wire Draw Benches	631	851
Wire Drawing Machines	See 631	851
Wire Fence Machines	659	855
Wire Formers	633	852
Bail	634	852
Ring	See 660	855
Wire, Fuse	354	226
Wire Gages	638	852
Electrical	350	225
Wire Galvanizing Machinery	636	852
Wire Gate Hook Machines, Automatic	637	852
Wire Guards	351	225
Wire Guards, Lamp	See 203	182
Wire Handle Machines	639	852
Wire, Insulated	355	226
Wire and Links, Fuse	354	226
Wire, Magnet	See 356	227
Wire Making and Wire Working Machinery	621	850
Wire Mill Trucks	76	545
Wire Milling Machines	See 223	778
Wire Mufflers	641	853
Wire Nail Machinery	642	853
Wire Pliers	643	853
Wire Pointing Machines	644	853
Wire Reels	645	853
Wire Reels, Pay Out and Take Up	267	201
Wire, Resistance	360	228
Wire Ring Formers	See 660	855
Wire Rod Frames	646	854
Wire Rolling Mills	647	854
Wire Rope	78	546
Wire Splicing Clamps	See 106	157
Wire Spoolers	648	854
Wire Staple Machines	649	854
Wire Stitching Machines, Book	35	468
Wire Straighteners	650	854
Wire Straightening and Cutting Machine, Automatic	651	854
Wire Straightening, Measuring, Forming and Cutting Machines	652	854
Wire Swaging Machines	653	855
Wire Tack Machines	654	855
Wire Testers	180	919
Wire Twisters	657	855
Wire Weavers	658	855
Wire Winders	660	855
Wireless Telegraph Instruments	324A	218

	Heading	Page
Wires, Fourdrinier	73	475
Wiring Cleats, Car	86	152
Wiring Machines	661	855
Wiring Machines, Blind	460	714
Wiring Machines, Bottle	9	862
Wiring and Seaming Machines	567	842
Wiring Tubes	342	224
Wood Barkers	59	472
Wood Chippers	62	473
Wood Grinders	68	474
Wood Scraping Machines	441	711
Wood Split Pulley Clutches	See 227	383
Wood Split Pulleys	227	383
Wood Trimming Machines	See 65	623
Wood Turning Lathes	342	681
Wood Workers, Universal	454	713
Wood Working Machinery	259	665
Wooden Hand Pumps	284	398
Wooden Pipe	106	337
Wool Cards	See 34	497
Wool Preparing Machinery	54	501
Wool Scouring and Washing Machines	57	502
Woolen Looms	69	503
Workers, Butter	46	875
Worm Thread Tool Gages	392	809
Worm Wheel Gears	206	374
Worsted Looms	70	503
Woven-Wire Brushes	58	147
Wrapping Machines	11	863
Hose	144	906
Wrecking Cranes	41	534
Wrecking Cars	36	443
Wrecking Frogs	See 64	449
Wrenches		
Bridge Builders'	448	820
Monkey	449	820
Pipe	450	820
Ratchet	451	821
Socket	452	821
Standard	453	821
Tap	454	821
Wringer Roll Grinders, Rubber	144	906
Wringers, Laundry	95	890
Wringing Machines, Tobacco	183	920
Wrought Iron Pipe	107	337
X-Ray Outfits	361	228
"Y" Valves	157	356
Yankee Spring Dividers	358	805
Yankee Thread Calipers	348	804
Yarn Balling Machines	47	499
Zincs, Battery	362	229

SECTION I

ELECTRICAL APPARATUS

L. of C.

MANUFACTURERS OF

ELECTRICAL APPARATUS.

Alphabetical Index.

A. B. Electric Co., St. Louis, Mo.—Signs.
A. & W. Electric Sign Co., Garfield Bldg., Cleveland, O.—Clock Switches.
Aaron Electric Co., 141 S. Clinton St., Chicago.—Dynamos and and Motors.
Abbott, Eugene B., 576 Central Ave., Cleveland, O.—Signs, Cut Outs, Igniters.
Ackerman, Chas. N., & Co., 287 Elm St., Chicago, Ill.—Telephones.
Acme Electric Co., 199 So. Canal St., Chicago, Ill.—Bells, Telephones.
Acme Switch Co., 438 Asylum St., Hartford, Conn.—Signs.
Acme Twist Drill Co., Laconia, N. H.—Hangers.
Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.—Switchboards, etc.
Adams, C. F., Trenton, N. J.—Fans.
Adams-Bagnall Electric Co., Cleveland, O.—Hangers, Arc Lamps.
Adams & Westlake Co., 110 Ontario St., Chicago, Ill.—Gongs, Arc Lamps, Rail Bonds.
Ajax Motor Vehicle Co., 220 W. 36th St., New York.—Automobile Motors and Controllers.
Akron Automobile Co., Akron, O.—Motors.
Akron Electrical Mfg. Co., Akron, O.—Dynamos, Motors, Switches, etc.
Akron Insulator & Marble Co., Akron, O.—Insulators, etc.
Akron Smoking Pipe Co., Mogadore, O.—Insulators, etc.
Allen-Hussey Co., Jackson Blvd. & Clinton St., Chicago, Ill.—Telephones.
Almon, G. H., Montpelier, Vt.—Electrical Fixtures.
Alphaduct Mfg. Co., 522 W. 22d St., New York.—Conduits.
Altman & Co., 6 Dearborn St., Chicago, Ill.—Telephones.
American Automatic Fire Alarm Co., Cleveland, O.—Fire Alarm Systems.
American Automatic Switch Co., New Haven, Conn.—Switches.
American Automatic Switch & Signal Co., 84 La Salle St., Chicago, Ill.—Signals.
American Battery Co., 174 So. Clinton St., Chicago, Ill.—Batteries.
American Brass & Copper Co., 19 E. 21st St., New York.—Fixtures.
American Car & Ship Hardware Mfg. Co., New Castle, Pa.—Burglar Alarms, Push Buttons.
American Carbon & Battery Co., 2134 De Kalb St., St. Louis, Mo.—Batteries, Carbons, Battery Jars.

American Carbon Co., Noblesville, Ind.—Brushes, Carbons.
American Circular Loom Co., Chelsea, Mass.—Conduits.
American Coil Co., West Somerville, Mass.—Batteries, Dynamos.
American Conduit Co., Arcade Bldg., Philadelphia, Pa.—Conduits.
American Conduit Mfg. Co., New Kensington, Pa.—Conduits.
American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill. Fuses, Switches.
American Electric Heater Co., 17 Spencer St., Detroit, Mich.—Heating Apparatus.
American Electric Mfg. Co., Philadelphia, Pa.—Arc Lamps.
American Electric Switch Co., Pittsburg, Pa.—Switches.
American Electric Telephone Co., 38 W. Jackson Blvd., Chicago, Ill.—Telephones.
American Electrical Mfg. Co., Philadelphia, Pa.—Arc Lamps.
American Electrical Novelty & Mfg. Co., Hudson & Vandam Sts., New York.—Batteries, Lamps.
American Electrical Supply Co., 40 So. Howard St., Baltimore, Md.—Plugs, Sockets, Cut Outs.
American Electrical Works, Providence, R. I.—Cables, Electric Bells, Generators.
American Endoscopic Co., 212 Union St., Providence, R. I.—Incandescent Lamps.
American Engine Co., Bound Brook, N. J.—Dynamos, Motors.
American Hard Rubber Co., 9 Mercer St., New York.—Electrical Rubber Goods.
American Hardwood Mfg. Co., Grottoes, Va.—Telephone Boxes, Wire Molding.
American Incandescent Lamp Co., Philadelphia, Pa.—Incandescent Lamps.
American Insulated Wire & Cable Co., 241 So. Jefferson St., Chicago, Ill.—Wire, Cables, etc.
American Lamp & Brass Co., Trenton, N. J.—Fixtures.
American Machine Mfg. Co., 251 Congress St., Boston, Mass.—Attachment Plugs.
American Machine Telephone Co., Piqua, O.—Switchboards, Telephones.
American Marble & Toy Mfg. Co., Akron, O.—Insulators.
American Miniature & Decorative Lamp Co., 436 Broome St., New York.—Incandescent Lamps.
American Motor Carriage Co., 514 E. Prospect St., Cleveland, O.—Batteries, etc.
American Push Button Telephone Co., 436 Fifth Ave., New York.—Telephones.
American Reflector & Lighting Co., 2018 Van Buren St., Chicago, Ill.—Reflectors, Illuminated Signs, etc.
American Steel & Wire Co., The Rookery, Chicago, Ill.—Cables, Rail Bonds, etc.
American Stone Conduit Co., 94 La Salle St., Chicago, Ill.—Conduits.
American Transformer Co., Newark, N. J.—Transformers.
American Tube & Stamping Co., Bridgeport, Conn.—Electric Gongs.
American Twist Drill Co., Laconia, N. H.—Hangers.
American Vitrified Conduit Co., Broadway-Maiden Lane Bldg., New York.—Conduits.
American Vulcanized Fibre Co., 1017 Market St., Wilmington, Del.—Cord Adjusters.

American Watchman's Time Detector Co., 234 Broadway, New York.—Electric Time Systems.
American Woven Wire Brush Co., Salem, Mass.—Brushes.
Amos, Charles, & Co., Detroit, Mich.—Lamp Guards, Fuse Wire.
Anchor Lamp Co., 258 Broadway, New York.—Incandescent Lamps.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.—Brackets and Pins, Insulators, Switches.
Anderson, Homer, Peekskill, N. Y.—Wire Reels.
Anderson, W. H., & Sons, Inc., 21 St. Aubin Ave., Detroit, Mich.—Hangers, Reels.
Anderson Tool Co., Anderson, Ind.—Arc Lamps.
Andrae, Julius, & Sons Co., Milwaukee, Wis.—Switchboards, Telephones.
Andrews & Johnson Co., 256 Washington Blvd., Chicago, Ill.—Fans.
Ansonia Brass & Copper Co., 97-99 John St., New York.—Wire.
Ansonia Electrical Co., Ansonia, Conn.—Annunciators, Coils, Batteries.
Apfel Murdoch Co., 82 Lake St., Chicago, Ill.—Igniters, Spark Coils.
Archer & Pancoast Co., 10th Ave. & 24th St., New York.—Fixtures.
Armitage-Herschell Co., North Tonawanda, N. Y.—Dynamos, Motors.
Atkinson, J. M., Co., 2427 Calumet Ave., Chicago, Ill.—Circuit Breakers, Switchboards.
Atlantic Tube Co., Pittsburg, Pa.—Trolley Poles.
Atwater-Kent Mfg. Works, 112 N. 6th St., Philadelphia, Pa.—Telephones.
Austin, M. B., & Co., 56 W. Van Buren St., Chicago, Ill.—Switches.
Auto Electric Shunt Co., West New Brighton, S. I., N. Y.—Cut Outs.
Automatic Electric Co., Van Buren & Morgan Sts., Chicago, Ill.—Switchboards.
Automatic Electric Alarm Co., San Francisco, Cal.—Fire Alarm Systems.
Automatic Lightning Arrester Co., Ravenna, O.—Lightning Arresters.
Automatic Switch Co., 131 Liberty St., New York.—Controllers, Rheostats.
Automatic Time Stamp Co., Boston, Mass.—Electric Time Systems.
Averill, Frank E., Buffalo, N. Y.—Batteries, Brushes, Dynamos.
Ayers, J. W., 792 W. Madison St., Chicago, Ill.—Telephone Boxes.

Backus Water Motor Co., Newark, N. J.—Fans.
Badt, F. B., & Co., 1504 Monadnock Blk., Chicago, Ill.—Batteries.
Baggat, E., Co., 169 Adams St., Chicago, Ill.—Fixtures.
Bailey Mfg. Co., Elkin, N. C.—Cross Arms.
Bailey Reflector Co., Pittsburg, Pa.—Reflectors.
Baird Mfg. Co., 24 Michigan St., Chicago, Ill.—Battery Gages, Electric Time Systems.
Baldinger & Kupfermann, 433 Broadway, Brooklyn, N. Y.—Fixtures.

Baldwin Engineering Co., 107 W. 17th St., New York.—Fans.
Baldwin Locomotive Works, Philadelphia, Pa.—Mine Locomotives.
Ball Electric Co., 404 W. 27th St., New York.—Dynamos, Arc Lamps, Magnets.
Balsley & Bryner, Connellsville, Pa.—Sockets.
Banner Electric Co., Bane & Walnut Sts., Youngstown, O.—Clock Switches, Insulators, Panel Boards.
Barbee Wire & Iron Works, Lafayette, Ind.—Fuse Wire.
Barkelew Electric Mfg. Co., Middletown, O.—Brushes, Switches.
Barnes, Wallace Co., Bristol, Conn.—Springs.
Barr, W. J., 131 Viaduct St., Cleveland, O.—Telephones.
Barriett Electric Co., Cincinnati, O.—Dynamos, Motors.
Barrio Vacuum Co., 156 E. 23d St., New York.—Coils, Tubes.
Bartz, Evans & Wygant, Hornellsville, N. Y.—Dynamos, Motors.
Bates, D. L., & Bro., Dayton, O.—Fans.
Batesville Insulator, Pin & Bracket Works, Batesville, Miss.—Brackets and Pins.
Baylis Co., 140 Washington St., New York.—Brush Holders.
Bean, A. E., Automobile Co., 6 Winter St., Boston, Mass.—Attachment Plugs.
Beattie Zinc Works Co., Reading, Mass.—Battery Coppers, Battery Zincs.
Beck Electric Co., St. Louis, Mo.—Panel Boards, Switches.
Becker Bros., 39-43 Washington St., Chicago, Ill.—Brushes, Brush Holders.
Bell Electric Motor Co., 197 Wooster St., New York.—Commutators, Dynamos, Motors.
Bell Telephone Co., Philadelphia, Pa.—Telephones.
Benjamin Electric Mfg. Co., 141 So. Clinton St., Chicago, Ill. Bases, Fixtures, Reflectors.
Benton, Thos. P., & Son, 200 So. Front St., La Crosse, Wis.—Dynamos, Motors, Switchboards.
Berggren Electric Co., 414 Jackson St., St. Paul, Minn.—Desk Lights.
Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.—Dynamos, Motors, Switchboards, etc.
Bernstein Electric Mfg. Co., Gardner & Roxbury Sts., Boston, Mass.—Fixtures, Incandescent Lamps, Sockets.
Bernz, Otto, Newark, N. J.—Burglar Alarms.
Bevin Bros., & Co., East Hampton, Conn.—Bells.
Billings & Spencer Co., Hartford, Conn.—Insulators, Line Materials.
Birtman, C. F., Co., 45 Randolph St., Chicago, Ill.—Rheostats, X-ray Outfits.
Bishop, W. S., Atwater Blk., New Haven, Conn.—Dynamos.
Bishop Gutta Percha Co., 420 E. 25th St., New York.—Cables, Insulated Wire.
Bissell, F., Co., 226-230 Huron St., Toledo, O.—Telephone Booths, etc.
Black-Allan Co., St. Paul, Minn.—Fixtures.
Black River Telephone Co., Lorain, O.—Telephones.
Blaiser, M. E., & Co., Utica, N. Y.—Fixtures.
Bliss-Chester Co., Providence, R. I.—Incandescent Lamp Bases.
Blue Ridge Locust Pin Co., Asheville, N. C.—Brackets and Pins.

Boehm, Herman, Youngstown, O.—Incandescent Lamps.
Bogert & Hopper, 162 William St., New York.—Bases, Adjusters.
Boggs, J. S., Troy, N. C.—Brackets and Pins, Cross Arms.
Bogue, Charles J., 213 Centre St., New York.—Brushes, Motors, Search Lights.
Bohn, C. C., 729 6th Ave., New York.—Batteries.
Boker, Herrmann, & Co., 101 Duane St., New York.—Wire.
Bossert Electric Construction Co., Capital Ave. & York St., Utica, N. Y.—Switchboards, etc.
Bossier Electric Co., 478 Pearl St., New York.—Dynamos.
Boston Automatic Fire Alarm Co., 104 Milk St., Boston, Mass. Fire Alarm Systems.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.—Alarms, Fans, Switchboards.
Boston Electric Fan & Heating Co., 170 Summer St., Boston, Mass.—Fans, Heating Apparatus.
Boston Electroduct Co., Chelsea, Mass.—Conduits.
Boston Reflector Co., Boston, Mass.—Desk Lights.
Bourn Rubber Co., 49 Westfield St., Providence, R. I.—Rubber Covered Wire.
Bowers Mfg. Co., Mogadore, O.—Insulators, etc.
Bradford, Kyle & Co., Plymouth, Mass.—Insulated Magnets, Wire.
Bradley, E. C., & Co., Rochester, N. Y.—Coils.
Bradley Motor Co., 268 Diamond St., Philadelphia, Pa.—Attachment Plugs.
Bradley & Hibbard Mfg. Co., Meriden, Conn.—Fixtures.
Brady, Thos. H., 351 Main St., New Britain, Conn.—Fixtures, Transmission Poles.
Braun, D. J., Mfg. Co., 135 W. Washington St., Chicago, Ill.—Fixtures.
Bredsvold Mfg. Co., St. Louis, Mo.—Fixtures.
Brenner Bros. Mfg. Co., Waterbury, Conn.—Fixtures.
Brian Pottery Co., Trenton, N. J.—Insulators, etc.
Bridgeport Brass Co., Bridgeport, Conn.—Gongs, Insulated Wire, Wire Guards.
Briggs Electric Co., Cleveland, O.—Telephones.
Bright Telephone Mfg. Co., 104 No. 6th St., Philadelphia, Pa. Telephones.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.—Electric Gongs.
Brilliant Sign Co., 85 Washington St., Chicago, Ill.—Illuminated Signs.
Bristol Co., Waterbury, Conn.—Measuring Instruments, Recording Meters.
Brixey, W. R., 203 Broadway, New York.—Conduits, Insulating Tape, Rubber Covered Wire.
Brodie Electric Co., Manchester, N. H.—Insulators.
Brookfield Glass Co., 218 Broadway, New York.—Insulators, Battery Jars.
Brooklyn Electric Lamp & Novelty Co., 105 Liberty St., Brooklyn, N. Y.—Batteries, Incandescent Lamps.
Brown, Harold P., 120 Liberty St., New York.—Rail Bonds.
Brown, Jas., & Son, Pittsburg, Pa.—Fixtures.
Browning Mfg. Co., Milwaukee, Wis.—Dynamos, Motors.
Brunswick Mfg. Co., Brunswick, Me.—Dynamos, Motors.
Brunt, G. F., Porcelain Works, East Liverpool, O.—Insulators.
Bryan, Jas., & Co., Pittsburg, Pa.—Rail Bonds.

Bryan-Marsh Co., 136 Liberty St., New York.—Incandescent Lamps.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.—Cleats, Panel Boards, Switches.
Bryant Mfg. Co., 125 Indiana St., Chicago, Ill.—Battery Zincs.
Bryant Zinc Co., 71 W. Adams St., Chicago, Ill.—Battery Zincs.
Buckeye Electric Co., Buffalo, N. Y.—Globes, Incandescent Lamps.
Buckley Electric & Mfg. Co., Kalamazoo, Mich.—Dynamos, Motors.
Buffalo Battery Co., Buffalo, N. Y.—Batteries.
Buffalo Specialty Mfg. Co., Buffalo, N. Y.—Mast Arms.
Bullock Electric Mfg. Co., Cincinnati, O.—Motors, Switchboards, Meters, etc.
Bunnell, J. H., & Co., 20 Park Place, New York.—Batteries, Motors, Telegraph Instruments.
Bunnell Telegraphic and Electrical Co., 110 Beekman St., New York.—Batteries, Telegraph Instruments, etc.
Burdett-Rowntree Mfg. Co., 85 W. Jackson St., Chicago, Ill.—Sockets.
Burger, A., 39 E. 8th St., New York.—Illuminated Signs.
Burnap, Wm. H., 259 W. 27th St., New York.—Batteries.
Burnett's Model & Electric Works, Ludlow, Ky.—Telephones.
Burnley Battery & Mfg. Co., Painesville, O.—Batteries.
Burns, Jas. F., 811 Fairmont Ave., Philadelphia, Pa.—Cleats.
Burr Mfg. Co., Cleveland, O.—Linemen's Tools.
Burry, John, 654 Hudson St., New York.—Batteries, Telegraph Instruments.
Burt & Tobey, New Bedford, Mass.—Wire Connections.
Butler, Geo. R., & Co., Sandusky, O.—Cross Arms.
Butler-Taylor Co., Ravenna, O.—Lightning Arresters.
Byesville Glass & Lamp Co., Byesville, O.—Globes and Shades.
C. & C. Electric Co., 143 Liberty St., New York.—Motors, Switchboards, etc.
Caldwell, E. F., & Co., 48 W. 15th St., New York.—Fixtures.
California Electric Works, San Francisco, Cal.—Brush Holders.
Camden & Underwood, Parkersburg, W. Va.—Switchboards, etc.
Cameron, H. P., Electrical Mfg. Co., Ansonia, Conn.—Commutator Bars.
Camp, H. B., Co., 170 Broadway, New York.—Conduits.
Canton Glass Works, Marion, Ind.—Battery Jars.
Canton Insulator & Clay Co., Canton, O.—Insulators, etc.
Capitol Electric Co., Denver, Col.—Incandescent Lamps.
Capitol Electric Engineering Co., Lansing, Mich.—Spark Coils.
Carlisle & Finch Co., 229 E. Clifton Ave., Cincinnati, O.—Igniters, Incandescent Lamps, etc.
Carpenter Enclosed Resistance Co., 79 E. 130th St., New York. Rheostats.
Carter Mfg. Co., Louisville, Ky.—Batteries.
Carter-Mann Lumber Co., Mansfield, O.—Telephone Booths.
Cartwright Bros., East Liverpool, O.—Porous Cups.
Cary Springs Works, 240 W. 29th St., New York.—Springs.
Cassidy & Son Mfg. Co., 133 W. 23d St., New York.—Fixtures.
Central City Brass Co., Syracuse, N. Y.—Brush Holders.
Central Electric & Foundry Co., Lewisburg, Pa.—Dynamos, Motors.

Central Electric Mfg. Co., Tacoma, Wash.—Telegraph Apparatus.
Central Mfg. Co., Chattanooga, Tenn.—Brackets and Pins, Poles, etc.
Central Supply Co., Columbus, O.—Fixtures.
Central Telephone & Electric Co., 909 Market St., St. Louis, Mo.—Telephones, etc.
Central Union Brass Co., St. Louis, Mo.—Insulators, Line Materials, etc.
Century Brass Co., Bellaire, O.—Arc Light Globes.
Century Telephone Construction Co., Cleveland, O.—Telephones, etc.
Chapman, W. H., Portland, Me.—Motors.
Chase Electric Sign Co., Franklin & Washington Sts., Chicago, Ill.—Illuminating Signs.
Chase-Shawmut Co., Newburyport, Mass.—Panel Boards, Switches, etc.
Chattanooga Armature Works, Chattanooga, Tenn.—Annunciators, Commutators.
Cheatham Electric Switching Device Co., Louisville, Ky.—Track Switches.
Cheswick Mfg. Co., Cheswick, Pa.—Bells.
Chicago Dental Mfg. Co., 90 State St., Chicago, Ill.—Electro-Dental Apparatus.
Chicago Die & Electric Co., 87 W. Lake St., Chicago, Ill.—Fuses, Lightning Arresters, etc.
Chicago Edison Co., 139 Adams St., Chicago, Ill.—Carbons, Hangers.
Chicago Electric Mfg. Co., 60 W. Van Buren St., Chicago, Ill.—Switchboards.
Chicago Fuse Wire & Mfg. Co., 358 Dearborn St., Chicago, Ill.—Fuses, Insulated Wire.
Chicago Gas & Electric Fixture Co., 19 So. Jefferson St., Chicago, Ill.—Fixtures.
Chicago General Fixture Co., 169 Adams St., Chicago, Ill.—Fixtures.
Chicago Insulated Wire Co., 152 Lake St., Chicago, Ill.—Wire Guards, Insulated Wire.
Chicago Lamp Works, 77 Blue Island Ave., Chicago, Ill.—Reflectors.
Chicago Storage Battery Co., 1406 Fisher Bldg., Chicago, Ill.—Batteries.
Chicago Telephone Co., Washington & Franklin Sts., Chicago, Ill.—Telephones.
Chicago Telephone Supply Co., Elkhart, Ind.—Bells, Switchboards, etc.
Chloride of Silver Dry Cell Battery Co., 409 No. Paca St., Baltimore, Md.—Batteries.
Cincinnati Tool Co., Cincinnati, O.—Linemen's Tools.
Clark, A. F., & Co., 2130 W. Susquehanna Ave., Philadelphia, Pa.—Storage Batteries.
Clark, Jas., Jr., & Co., Louisville, Ky.—Dynamos, Motors.
Clark, Thos. E., Wireless Telegraph & Telephone Co., Detroit, Mich.—Telegraph Instruments.
Clark Automatic Telephone Switchboard Co., Providence, R. I.—Telephones.
Clark Bros., Glass Mfg. Co., Elwood City, Pa.—Globes and Shades, Generators.

Clark, Burris, Mfg. Co., 65 So. Canal St., Chicago, Ill.—Switchboards, Switches, etc.
Clayton & Co., Trenton, N. J.—Cleats.
Cleveland Armature Works, Hamilton & Coe Sts., Cleveland, O.—Annunciators, etc.
Cleveland Bronze & Brass Works, Cleveland, O.—Rail Bonds.
Cleveland Gas & Electric Fixture Co., Cleveland, O.—Fixtures.
Cleveland Refilled Incandescent Lamp Co., Cleveland, O.—Renewed Incandescent Lamps.
Cleveland Rubber Works, Cleveland, O.—Insulating Tape.
Cleveland Switchboard & Electric Mfg. Co., 14 Middle St., Cleveland, O.—Switchboards, Switches, etc.
Cleverly Electrical Works, 1018 Chestnut St., Philadelphia, Pa.—Gas Lighting Apparatus.
Clifton Mfg. Co., 220 Devonshire St., Boston, Mass.—Conduits. Insulating Tape.
Coe Brass Mfg. Co., Ansonia, Conn.—Wire Guards, etc.
Cohn & Rock, Princess Anne, Md.—Cross Arms.
Cole & Son, Rockford, Ill.—Alarms, Telephones.
College City Electric Co., Galesburg, Ill.—Clock Switches.
Collyer Insulated Wire Co., Pawtucket, R. I.—Insulated Wire.
Colonial Electric Co., Ravenna, O.—Incandescent Lamps.
Colonial Foundry & Machinery Co., Inc., South Norwalk, Conn. Dynamos.
Colonial Mfg. Co., Syracuse, N. Y.—Switches.
Colonial Sign Co., Akron, O.—Illuminated Signs.
Columbia Electric & Mfg. Co., Newark, N. J.—Arc Lamps.
Columbia Incandescent Lamp Co., St. Louis, Mo.—Globes and Shades, Incandescent Lamps.
Columbia Insulator Co., Trenton, N. J.—Insulators.
Columbia Insulator Co., Akron, O.—Insulators.
Columbia Machine Works, Atlantic Ave. & Chestnut St., Brooklyn, N. Y.—Insulators, Line Materials, etc.
Columbus Insulated Wire & Brass Co., Columbus, O.—Wire Guards, Insulated Magnets.
Columbus Storage Battery Co., 128 W. Spring St., Columbus, O.—Batteries, Spark Coils.
Commercial Electric Co., Indianapolis, Ind.—Dynamos, Switchboards, etc.
Commutator Co., Minneapolis, Minn.—Commutator Bars.
Condit, S. B., Jr., & Co., 63 Oliver St., Boston, Mass.—Conduits, Switchboards, etc.
Connecticut Dynamo & Motor Co., 526 W. 25th St., New York. Dynamos, Motors.
Connecticut Insulating Wire Co., Ansonia, Conn.—Insulated Magnet Wire.
Conecticut Telephone & Electric Co., Meriden, Conn.—Electric Bells, Telephones, etc.
Connell, Wm., Boyce, Pa.—Illuminated Signs.
Consolidated Car Heating Co., Albany, N. Y.—Car Heating Apparatus.
Consolidated Electric Lamp Co., Danvers, Mass.—Incandescent Lamps.
Consumers' Carbon Co., Lancaster, O.—Carbons.
Consumers' Incandescent Lamp Co., Owensboro, Ky.—Incandescent Lamps.
Consumers' Rubber Co., 199 Bank St., Cleveland, O.—Insulating Tape.
Continental Electric Co., Decatur, Ill.—Arc Lamps.

Cook, F. B., 240 Lake St., Chicago, Ill.—Spark Arresters.
Cook, T. W. G., 2-6 Reade St., New York.—Armature Disks.
Co-operative Electric Mfg. Co., Corry, Pa.—Dynamos.
Cope, T. J., Philadelphia, Pa.—Linemen's Tools.
Copenhagen Automatic Fire Alarm Co., Sheboygan, Wis.—Fire Alarm Systems.
Cornwell, R. M., Co., Syracuse, N. Y.—Fixtures, Switches, etc.
Corry Novelty Works, Corry, Pa.—Dynamos, Motors, etc.
Couch, S. H., Co., 156 Pearl St., Boston, Mass.—Telephones, etc.
Couch & Seeley Co., 26 Binford St., Boston, Mass.—Insulators, Telephones, etc.
Country Home Telephone Co., 215 So. Clinton St., Chicago, Ill.—Telephones.
Creaghead Engineering Co., Cincinnati, O.—Insulators, Line Materials, etc.
Creed Electric Car Heating Co., Taunton, Mass.—Car Heating Apparatus.
Creosoting Works, Long Island City, N. Y.—Conduits.
Crescent Co., 134 Van Buren St., Chicago, Ill.—Cord Adjusters.
Crescent Electrical Mfg. Co., Rochester, N. Y.—Cut Outs.
Crescent Electrical & Repair Co., Pittsburg, Pa.—Motors.
Crescent Iron Works, Springfield, Mo.—Dynamos, Motors.
Crescent Machine Co., Detroit, Mich.—Spark Coils.
Crest Mfg. Co., Cambridgeport, Mass.—Igniters, Spark Coils.
Crider, S. S., Sterling, Ill.—Lightning Arresters, Telephones.
Crocker-Wheeler Co., Ampere, N. J.—Dynamos, Motors, etc.
Cross & Co., Detroit, Mich.—Junction Boxes.
Crouse-Hinds Electric Co., Syracuse, N. Y.—Switchboards, Switches, etc.
Crouse-Tremaine Carbon Co., Fostoria, O.—Brushes, Carbons.
Crown Woven Wire Brush Co., Salem, Mass.—Brushes.
Cumberland Glass Co., Bridgeton, N. J.—Battery Jars.
Cushman Electric Co., 253 Broadway, New York.—Generators, Motors, etc.
Cutler, Hammer Mfg. Co., 12th St. & St. Paul Ave., Milwaukee, Wis.—Rheostats, Switches, Controllers.
Cutter, Geo., Co., Union & Fulton Sts., Chicago, Ill.—Insulators, Switches, etc.
Cutter Electrical & Mfg. Co., 1728 Spring Garden St., Philadelphia, Pa.—Switches, Rheostats.
D. & D. Electric Mfg. Co., Minneapolis, Minn.—Dynamos, Motors.
D. & W. Fuse Co., 407 Pine St., Providence, R. I.—Fuses.
Dale Co., Ninth Ave. & 13th St., New York.—Fixtures, Switches, etc.
Dallett, Thos. H., & Co., York St. & Sedgley Ave., Philadelphia, Pa.—Dynamos, Motors, etc.
Darby, Edw., & Sons, 223 Arch St., Philadelphia, Pa.—Lamp Guards, Wire Guards.
Dart Mfg. Co., Hartford, Conn.—Switch Boxes.
Davis, M., & Sons, Salem, O.—Mast Arms, Motors, Panel Boards.
Davis Electric Mfg. Co., Springfield, Mass.—Connections and Terminals.
Day, Thos., Co., San Francisco, Cal.—Fixtures.
Dayton Electrical Mfg. Co., Dayton, O.—Dynamos, Motors, etc.
Dayton Fan & Motor Co., 611 E. 3d St., Dayton, O.—Fans, Motors, etc.
Dayton Mfg. Co., Dayton, O.—Bells.

Dayton Storage Battery Co., Dayton, O.—Batteries, Igniters.
De Ginther, Geo. M., Philadelphia, Pa.—Reflectors.
Delaware Hard Fibre Co., Wilmington, Del.—Cord Adjusters, Push Buttons.
Denison, L. S., Co., Youngstown, O.—Cut Outs, Sockets.
Detroit Automatic Switch Co., Mt. Clemens, Mich.—Track Switches.
Detroit Trolley & Mfg. Co., Ltd., Detroit, Mich.—Trolley Poles.
De Veau Telephone Mfg. Co., 27 Rose St., New York.—Switchboards, etc.
Diamond Arc Lamp Co., 48 Mt. Vernon Ave., Mt. Vernon, N. Y.—Arc Lamps.
Diamond Incandescent Lamp Co., Denver, Col.—Incandescent Lamps.
Diamond Meter Co., Peoria, Ill.—Transformers.
Diamond Porcelain Co., Trenton, N. J.—Insulators, etc.
Diamond Rubber Co., Akron, O.—Insulating Tape, etc.
Dicke Tool Co., Downers Grove, Ill.—Linemen's Tools, etc.
Dickey-Sutton Carbon Co., Lancaster, O.—Brushes, Carbons.
Dickinson Hard Rubber Co., Springfield, Mass.—Push Buttons.
Diehl Mfg. Co., Elizabethport, N. J.—Dynamos, Fans, Motors.
Dixon, Jos., Crucible Co., Jersey City, N. J.—Brushes, Resistance Rods.
Dodd & Struthers, Des Moines, Ia.—Batteries, X-Ray Outfits.
Dongan Instrument Co., 100 State St., Albany, N. Y.—Measuring Instruments.
Donnelly, John, Branford, Conn.—Linemen's Tools.
Dorlon, Philip S., Troy, N. Y.—Telephones.
Doty, C. E., Chicago, Ill.—Electric Signs.
Dow Portable Electric Co., 218 Tremont St., Boston, Mass.—Igniters, etc.
Drake Acetylene Apparatus Co., Cleveland, O.—Gas Lighting Apparatus.
Dressler, Chas. E., & Bro., 17 Lexington Ave., New York.—Batteries.
Driver-Harris Wire Co., Harrison, N. J.—Resistance Wire.
Duncan Electric Mfg. Co., Lafayette, Ind.—Measuring Instruments.
Durham Telephone Mfg. Co., Durham, N. C.—Telephones.
Dwyer Machine Co., Lynn, Mass.—Photometers.
Eager Electric Co., Watertown, N. Y.—Dynamos, Motors.
Eagle Electric Works, Peoria, Ill.—Dynamos, Panel Boards.
Eastern Carbon Works, Jersey City, N. J.—Batteries, Carbons.
Eastern Electric Co., 7 Water St., Boston, Mass.—Incandescent Lamps.
Eastern Telephone Mfg. Co., West Chester, Pa.—Telephones.
East Hampton Bell Co., East Hampton, Conn.—Bells.
Eccleston Lumber Co., 29 Broadway, New York.—Brackets and Pins, Cross Arms, Poles. *See adv. page 73.*
Eck Dynamo & Motor Works, Main & Mill Sts., Belleville, N. J.—Dynamos, Motors.
Eckl Sign Works, Milwaukee, Wis.—Illuminated Signs.
Economic Mfg. Co., Springfield, O.—Trolley Forks.
Economical Electric Lamp Co., 123 Liberty St., New York.—Incandescent Lamps.
Economy Electric Co., Warren, O.—Renewed Incandescent Lamps.
Edes Mfg. Co., Plymouth, Mass.—Battery Coppers, Battery Zincs.

Edgerton Pottery Co., Edgerton, Wis.—Battery Jars, etc.
Edison Decorative & Miniature Lamp Dept., Harrison, N. J.—Illuminated Signs.
Edison-Johnson Electrical Mfg. Co., 1135 Broadway, New York.—Trolley Forks, Line Materials.
Edison Mfg. Co., 83 Chambers St., New York.—Batteries, Fans.
Edmonds-Metzel Mfg. Co., 153 So. Jefferson St., Chicago, Ill.—Recording Meters.
Edwards, W. S., Mfg. Co., 21 Lake St., Chicago, Ill.—Fixtures.
Edwards & Co., 405-409 E. 144th St., New York.—Annunciators, Telegraph Instruments, etc.
Elblight Co., of America, 114 W. 32d St., New York.—Illuminated Signs.
Elbridge Electrical Mfg. Co., Elbridge, N. Y.—Dynamos, Motors, etc.
Eldredge Electric Mfg. Co., Springfield, Mass.—Battery Gages.
Electric Contract Co., 202 Centre St., New York.—Incandescent Lamps, Testing Instruments, etc.
Electric Contracting & Repairing Co., Ithaca, N. Y.—Motors.
Electric Controller & Supply Co., Cleveland, O.—Controllers, Electro Magnets, Switches.
Electric Exploder Co., 120 Liberty St., New York.—Blasting Apparatus.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.—Gas Lighting Apparatus, Telephones, etc.
Electric Launch Co., Ave. A & North St., Bayonne, N. J.—Electric Launches.
Electric Machinery Co., Minneapolis, Minn.—Dynamos, Motors.
Electric Motor & Equipment Co., 13 Beaver St., Newark, N. J.—Clock Switches, Photometers, etc.
Electric Novelty Works, Atlanta, Ga.—Dynamos, Fans, Motors.
Electric Porcelain Co., East Liverpool, O.—Insulators, etc.
Electric Porcelain & Mfg. Co., Trenton, N. J.—Insulators, Sockets, etc.
Electric Railway Equipment Co., 431 E. Front St., Cincinnati, O.—Condensers, Trolley Forks, Insulators.
Electric Railway Switch & Supply Co., Springfield, Mass.—Switchboards, Switches, etc.
Electric Storage Battery Co., 19th St. & Allegheny Ave., Philadelphia, Pa.—Batteries.
Electric Supply Co., 105 Warren St., Syracuse, N. Y.—Cut Outs.
Electric Supply & Battery Co., 1424 Woodland Ave., Cleveland, O.—Batteries, Igniters.
Electric Supply & Engineering Co., Lansing, Mich.—Spark Coils.
Electrical Advertising Co., Worcester, Mass.—Electric Signs.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.—Batteries, Telephones, etc.
Electrical Engineering Co., Minneapolis, Minn.—Switches, Telephones.
Electrical Engineering Co., San Francisco, Cal.—Incandescent Lamps, Motors.
Electrical Material Co., 221 N. Calvert St., Baltimore, Md.—Switches.
Electrical Material Co., 167 Van Buren St., Chicago, Ill.—Telephones.
Electrical Repair & Construction Co., Cleveland, O.—Motors.

Electrical Supply & Telephone Co., 1330 Arch St., Philadelphia, Pa.—Telephones.
Electrolysis-proof Conduit Mfg. Co., Chicago, Ill.—Conduits.
Electro Dynamic Co., 224 Ionic St., Philadelphia, Pa.—Dynamos, Motors, Switchboards.
Electro-Mechanical Switch Co., Baltimore, Md.—Signals.
Electro-Medical Battery Co., Kalamazoo, Mich.—Batteries.
Electro-Medical Mfg. Co., 59th & Wallace Sts., Chicago, Ill.—Batteries, X-Ray Outfits, etc.
Electro-Therapeutic Mfg. Co., Indianapolis, Ind.—Batteries.
Electrose Mfg. Co., 127 No. 10th St., Brooklyn, N. Y.—Line Materials, Telephone Receivers.
Elektron Mfg. Co., Springfield, Mass.—Fans, Motors.
Elevator Supply & Repair Co., 34 W. Monroe St., Chicago, Ill. Brushes.
Elgin Telephone Co., Elgin, Ill.—Telephones.
Elliott Bros.. 970 Hamilton St., Cleveland, O.—Annunciators.
Elliott Telephone Co., Indianapolis, Ind.—Telephones.
Elwell-Parker Electric Co., Cleveland, O.—Dynamos, Motors.
Emerson Electric Mfg. Co., St. Louis, Mo.—Fans, Motors, Dynamos.
Empire China Works, 144 Greene St., Brooklyn, N. Y.—Insulators, etc.
Empire Electric Sign Co., 107 W. 29th St., New York.—Electric Signs.
Empire Electrical Instrument Co., 654 Hudson St., New York. Measuring Instruments.
Empire Storage Battery & Mfg. Co., 13 E. 39th St., New York. Batteries.
Empire Wire Co., 92 William St., New York.—Insulated Wire, etc. *See adv. page 72.*
Engberg's Electrical & Mechanical Works, St. Joseph, Mich.—Dynamos, Search Lights, etc.
Enterprise Gas & Electric Fixture & Brass Co., St. Louis, Mo.—Fixtures.
Eppinger & Russell Co., 66 Broad St., New York.—Conduits.
Ericsson Telephone Co., 296 Broadway, New York.—Telephones, Transformers, etc.
Erner Electric Co., 62 Public Square, Cleveland, O.—Switchboards, Switches, etc.
Estey Wire Works Co., 59 Fulton St., New York.—Lamp Guards.
Euker, Geo. W., Co., Richmond, Va.—Batteries, Igniters.
Eureka Automatic Electric Signal Co., Lansford, Pa.—Signals.
Eureka Communtator Brush Co., Milwaukee, Wis.—Brushes, Brush Holders.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.—Search Lights, Telephones, etc.
Eureka Fence Co., Richmond, Ind.—Linemen's Tools.
Eureka Mfg. Co., St. Paul, Minn.—Plugs, Spark Coils.
Eureka Tempered Copper Works, North East, Pa.—Insulating Machines, Switches, etc.
Evans, Wm. A., & Bros., Pittsburg, Pa.—Switchboards, Switches, etc.
Evens & Howard Fire Brick Co., St. Louis, Mo.—Conduits.
Everett Electric & Mfg. Co., Indianapolis, Ind.—Igniters.
Excelsior Burglar Alarm Co., Cleveland, O.—Burglar Alarms.
Eyanson, Geo. T., Commerce & 7th Sts., Philadelphia, Pa.—Switchboards, Switches, etc.

Fagan, J. C., Watertown, N. Y.—Cut Outs.
Fahnestock Transmitter Co., 74 Cortlandt St., New York.—Switches, Telephones.
Fairfield Motor Co., Bridgeport, Conn.—Gas Engine Igniters.
Falk, Co., Milwaukee, Wis.—Junction Boxes, Switches.
Faller Automatic Telephone Exchange, Union Square, New York.—Switchboards.
Faraday Carbon Co., Jeannette, Pa.—Brushes, Carbons.
Faries Mfg. Co., Decatur, Ill.—Fixtures, etc.
Farr Telephone & Construction Supply Co., 118 W. Jackson Blvd., Chicago, Ill.—Insulators, Switches, etc.
Federal Clay Mfg. Co., 170 Broadway, New York.—Third Rail Insulators.
Federal Electric Co., 519 Myrtle St., Erie, Pa.—Motors, Rheostats.
Federal Electric Co., 76 Market St., Chicago, Ill.—Globes and Shades, Reflectors.
Fensterer & Ruhe, 47 Murray St., New York.—Fixtures, Insulators, etc.
Ferdinand, L. W., & Co., Boston, Mass.—Linemen's Tools.
Ferricup Metal Co., East Greenwich, R. I.—Copper Wire.
Ferrin, F. M., 45 Arch St., Boston, Mass.—Insulated Cord, Cables, etc.
Fibre Conduit Co., Orangeburg, N. Y.—Conduits.
Fidelity Pottery Co., Trenton, N. J.—Porous Cups.
Finch, J. H., 96 High St., Boston, Mass.—Fixtures.
Findlay, Robt., Mfg. Co., 349 Adams St., Brooklyn, N. Y.—Fixtures.
Fisher, J. J., & Co., Crafton, Pa.—Switchboards, Switches, etc.
Fisher Electrical Works, Detroit, Mich.—Dynamos, Switchboards, etc.
Fisk, H. M., Mfg. Co., Wheaton, Ill.—Switchboards.
Fisk-Newhall Telephone Mfg. Co., Chicago, Ill.—Telephones, etc.
Fitzsimmons Telephone Mfg. Co., Cincinnati, O.—Telephones.
Flagg, I. J., Clinton, Mass.—Sockets.
Fleming, W. H., Co., Salem, Mass.—Brushes.
Flemming, Otto, Philadelphia, Pa.—Batteries.
Fletcher Mfg. Co., Dayton, O.—Hangers, Mast Arms.
Flint-Lomax Electric Mfg. Co., Denver, Col.—Dynamos, Motors, etc.
Foote, Pierson & Co., 82 Fulton St., New York.—Voltage Registers, Telegraph Instruments, etc.
Forbes, Jas. A., East Hampton, Conn.—Bells.
Forest City Electric Co., Cleveland, O.—Commutator Bars.
Fort Wayne Electric Works, Fort Wayne, Ind.—Dynamos, Motors, etc.
Fostoria Bulb & Bottle Co., Fostoria, O.—Globes and Shades.
Fostoria Glass Specialty Co., Fostoria, O.—Globes and Shades.
Fostoria Incandescent Lamp Co., Fostoria, O.—Globes and Shades, Incandescent Lamps.
Fowler & Robert Mfg. Co., 1263 Atlantic Ave., Brooklyn, N. Y.—Car Heating Apparatus.
Fox, Anthony W., 83 Schermerhorn St., Brooklyn, N. Y.—Photo-Engraving Lamps.
Fox, J. M., & Co., Portland, Me.—Battery Coppers.
France Packing Co., Tacony, Philadelphia, Pa.—Cut-Outs.
Franklin Electric Mfg. Co., Hartford, Conn.—Incandescent Lamps.

Franklin Zinc & Mfg. Co., Pittsburg, Pa.—Battery Zincs.
Freed, Henry F., Harrisburg, Pa.—Dynamos.
Freeman, E. H., Rochester, N. Y.—Cut Outs, Switches.
Friedlander, R., & Co., Flat Iron Bldg., New York.—Crooke's Tubes.
Frierfelder Telephone Co., Cincinnati, O.—Telephones.
Frink, I. P., 551 Pearl St., New York.—Globes and Shades, Reflectors.
Fuller Co., Russell St. & Boulevard, Detroit, Mich.—Motors.
G. & E. Electric & Construction Co., Binghamton, N. Y.—Boring Machines for Electrical Wiring.
Gaites, Peace & Co., 22 Clay St., Brooklyn, N. Y.—Fixtures.
Galewski, A., 90 Chambers St., New York.—Linemen's Tools.
Galvanic Metal Paper Co., Jersey City, N. J.—Brushes.
Gamewell Fire Alarm Telegraph Co., 19 Barclay St., New York.—Fire Alarm Signals.
Garden City Chandelier Co., 297 Wabash Ave., Chicago, Ill.—Fixtures.
Garden City Fan Co., 42 So. Clinton St., Chicago, Ill.—Heating Apparatus.
Garl Electric Co., Akron, O.—Fire Alarm Systems, Telephones, etc.
Garrett, Miller & Co., 4th & Orange Sts., Wilmington, Del.—Telephones, etc.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.—Bells, Trolley Poles, Signs.
Garton-Daniels Co., Keokuk, Ia.—Lightning Arresters.
Gas Engine Ignition Co., Chicago, Ill.—Igniters.
Gaumer, John L., Co., 19th & Hamilton Sts., Philadelphia, Pa. Fixtures.
Gaynor, John, Salem, N. J.—Battery Jars.
General Electric Co., Schenectady, N. Y.—Dynamos, Motors, etc.
General Electric Co., Harrison, N. J.—Incandescent Lamps.
General Equipment Co., Camden, N. J.—Circuit Breakers.
General Incandescent Arc Light Co., 529 W. 34th St., New York.—Fixtures, Incandescent Lamps, etc.
General Incandescent Lamp Co., Cleveland, O.—Incandescent Lamps.
General Storage Battery Co., Chicago, Ill.—Batteries.
General Watchman's Time Detector Co., 49 Dey St., New York. Watchmen's Time Detectors.
Genevieve Co., Iowa City, Ia.—Cord Adjusters.
Germania Electric Lamp Co., Harrison, N. J.—Incandescent Lamps.
Gibson, Cecil E., 116 E. Ohio St., Indianapolis, Ind.—Plugs.
Gibson Gas Fixture Works, Philadelphia, Pa.—Fixtures.
Gifford & Henry, 15 So. 3d St., Philadelphia, Pa.—Annunciators.
Gilchrist Jar Co., Elmer, N. J.—Battery Jars.
Gill & Co., York & E. Thompson Sts., Philadelphia, Pa.—Globes and Shades.
Gilliland Electric Co., Adrian, Mich.—Telephones.
Gilliland Pin & Bracket Co., Adrian, Mich.—Brackets and Pins.
Gilliland Telephone & Supply Co., Adrian, Mich.—Telephones.
Gillinder & Sons, 135 Oxford St., Philadelphia, Pa.—Globes and Shades, Battery Jars.

Gilmore Electric Co., 625 First St., Boston, Mass.—Dynamos, Motors, etc.
Glaenzer, Freres & Rheinboldt, 26 Washington Place, New York.—Electro Magnets.
Gleason, E. P., Mfg. Co., 20 W. Houston St., New York.—Fixtures, Globes and Shades, etc.
Gleeson, Thos. W., 106 Sudbury St., Boston, Mass.—Testing Instruments.
Globe Automatic Telephone Co., 153-155 W. Jackson St., Chicago, Ill.—Switchboards, etc.
Globe Electric Controller Co., Amsterdam, N. Y.—Controllers, Rheostats.
Globe Electric Mfg. Co., Cleveland, O.—Arc Lamps.
Goetz, B., Mfg. Co., 251 Third Ave., New York.—Fixtures, Signs.
Gold Car Heating Co., 17 Battery Place, New York.—Car Heating Apparatus.
Gold Street Car Heating Co., New York.—Car Heating Apparatus.
Goltz Engineering Co., 127 Fulton St., Chicago, Ill.—Batteries, Signs.
Gong Bell Mfg. Co., East Hampton, Conn.—Bells.
Goodman Mfg. Co., 48th & Halsted Sts., Chicago, Ill.—Dynamos, Motors.
Goodrich, B. F., Akron, O.—Insulating Tape.
Goodyear Hard Rubber Co., 11 Broadway, New York.—Cord Adjusters.
Gordon Battery Co., 439 E. 144th St., New York.—Batteries, Spark Coils, etc.
Gorman, John, St. Paul, Minn.—Dynamos.
Gothberg, Bernard, Mfg. Co., 146 Worth St., New York.—Fixtures.
Goudey-McLean Co., 120 Liberty St., New York.—Dynamos, Motors.
Gough & Davis, Burnsville, W. Va.—Brackets and Pins.
Goughnour Electric Co., Canton, O.—Dynamos, Motors.
Gould Coupler Co., 25 W. 33d St., New York.—Car Lighting Apparatus.
Gould Storage Battery Co., 25 W. 33d St., New York.—Batteries.
Grand Rapids Electric Co., Grand Rapids, Mich.—Dynamos, Motors, Telephones.
Graphite Lubricating Co., Bound Brook, N. J.—Trolley Forks.
Graves, W. D., Electrical & Machine Co., 20 Michigan St., Cleveland, O.—Arc Lamps, Panel Boards, Switches.
Gray & Co., 505 Elm St., Cincinnati, O.—Dynamos.
Green, J. B., Electric Co., Evansville, Ind.—Search Lights.
Green Electric Co., Chicago, Ill.—Hangers.
Green Telephone & Electric Mfg. Co., Milwaukee, Wis.—Telephones.
Green & Bauer, 33 Wells St., Hartford, Conn.—Incandescent Lamps, X-Ray Outfits, etc.
Greenbrier Pole Co., 1022 Real Estate Trust Bldg., Philadelphia, Pa.—Poles.
Guarantee Electric Co., Chicago, Ill.—Commutators.
Gugler Electric Mfg. Co., Minneapolis, Minn.—Batteries.
Gurley, W. & L. E., Troy, N. Y.—Registers.
Haas, R., Electric & Mfg. Co., Springfield, Ill.—Switchboards.

Haeuser, August R., 163 William St., New York.—Aluminum Wire.
Haist, A., & Co., 73 W. Washington St., Chicago, Ill.—Lamp Guards.
Hall Signal Co., 25 Broad St., New York.—Railway Signals.
Haller Machine Co., 127 Fulton St., Chicago, Ill.—Signs.
Hamblin, John A., Co., 25 Calender St., Providence, R. I.—Arc Lamps.
Hamblin & Russell Mfg. Co., Worcester, Mass.—Lamp Guards, etc.
Hanford, George S., 1018 American Trust Bldg., Cleveland, O.—Spark Coils.
Hanson & Van Winkle, Newark, N. J.—Dynamos.
Hardware Specialty Co., Newark, N. J.—Push Buttons.
Hardy Lamp Co., Pittsfield, Mass.—Incandescent Lamps.
Harrison Bros., & Co., 35th St., cor. Gray's Ferry Road, Philadelphia, Pa.—Batteries.
Harrison Construction Co., 505 Elm St., Cincinnati, O.—Telephones.
Hart & Co., 804 Monadnock Blk., Chicago, Ill.—Brushes.
Hart Mfg. Co., 302 Asylum St., Hartford, Conn.—Switches.
Hartford Faience Co., Hartford, Conn.—Insulators, etc.
Hartford Machine Screw Co., Hartford, Conn.—Armature Cores.
Hartley & Rispin Electric Mfg. Co., Elgin, Ill.—Dynamos.
Hartman Circuit Breaker Co., Mansfield, O.—Circuit Breakers.
Harvard Electric Co., 226 So. Clinton St., Chicago, Ill.—Fuses, Transformers, etc.
Hatch Accumulator Co., 201 State St., Boston, Mass.—Batteries.
Hauss, D. J., 426 Pike Bldg., Cincinnati, O.—Batteries.
Hazard Mfg. Co., Wilkesbarre, Pa.—Cables, Insulated Wire, etc.
Heath Electric Co., 336 Grand River Ave., Detroit, Mich.—Annunciators, Burglar Alarms.
Heinemann, George, & Co., 737 Girard Ave., Philadelphia, Pa.—Brackets and Pins, Panel Boards, Signs.
Heinze Electric Co., Lowell, Mass.—Static Machines, etc.
Helios-Upton Co., Peabody, Mass.—Batteries, Switches, etc.
Hemingray Glass Co., Covington, Ky.—Insulators, Battery Jars.
Henderson Electric Co., 1334 Montana St., Chicago, Ill.—Insulators.
Hendricks Novelty Co., Indianapolis, Ind.—Igniters.
Herman, R., Crafton, Pa.—Panel Boards.
Hertner Electric Co., Cleveland, O.—Dynamos, Motors.
Herzog Telephone System Co., 170 Broadway, New York.—Telephones, Fire Alarms.
Herzog Teleseme Co., 51 W. 24th St., New York.—Burglar Alarms, Telegraph Apparatus, etc.
Hewitt & Warden, Newburgh, N. Y.—Switchboards, etc.
Heyden, F. L., 306 So. Clinton St., Chicago, Ill.—Telephone Boxes.
Hill, N. N., Brass Co., East Hampton, Conn.—Bells.
Hill, W. S., Electric Co., New Bedford, Mass.—Switchboards, Switches, etc.
Hipwell Mfg. Co., Allegheny, Pa.—Lamp Guards, Telephones, etc.
Hirlimann, C. J., 17 Laight St., New York.—Batteries.

Hobart Electric Mfg. Co., Troy, O.—Dynamos, Motors, etc.
Hochster, Albert, 60 W. 120th St., New York.—Batteries.
Hodge-Walsh Electrical Engineering Co., Kansas City, Mo.—Telephones.
Hollings, R., & Co., 39 Bedford St., Boston, Mass.—Fixtures.
Holmes, Booth & Haydens Co., Waterbury, Conn.—Wire Molding, Insulated Wire, etc.
Holmes Electric Protective Co., 36 Cortlandt St., New York.—Burglar Alarms.
Holmes Fibre Graphite Mfg. Co., Philadelphia, Pa.—Graphite Brushes.
Holophane Glass Co., 15 E. 32d St., New York.—Globes and Shades.
Holtzer-Cabot Electric Co., Brookline, Mass.—Dynamos, Motors, etc.
Homer Commutator Co., Mason near Wilson Ave., Cleveland, O.—Commutator Bars, Commutators.
Horn & Branner Mfg. Co., Philadelphia, Pa.—Fixtures.
Horton-Massnick Co., Detroit, Mich.—Fuses.
Housatonic Mfg. Co., New Haven, Conn.—Shade Holders.
Howard Electric Novelty Co., 221 Canal St., New York.—Batteries, Lanterns.
Hubbard & Co., Murtland Bldg., Pittsburg, Pa.—Cable Hangers.
Hubbell, Harvey, Bridgeport, Conn.—Fixtures, Plugs.
Hubbs-Neer Electrical Mfg. Co., Butler, O.—Batteries.
Hudson Electrical Works, Hudson, N. H.—Dynamos.
Hudson Porcelain Co., Trenton, N. J.—Insulators.
Huey, M. S., Co., Indianapolis, Ind.—Telephone Booths.
Hughes, Thomas, 51 E. 8th St., New York.—Signs.
Hughes Telephone Co., 123 Hanover St., Baltimore, Md.—Telephones.
Hunter Fan & Motor Co., Fulton, N. Y.—Fans.
Hunter Illuminated Car Sign Co., Cincinnati, O.—Signs.
Huntington Glass Co., Huntington, W. Va.—Battery Jars.
Hurd & Co., 576 W. Broadway, New York.—Cable Hangers.
Hussey Dynamo Battery Co., 39 Cortlandt St., New York.—Batteries.
Hutchins, R. E., Detroit, Mich.—Insulators, etc.
Hydra Battery Co., 70 Reade St., New York.—Batteries, Plugs, etc.
Iden & Co., 9th St. & University Pl., New York.—Fixtures.
Illinois Electrical Mfg. Co., 1220 So. Adams St., Peoria, Ill.—Annunciators, etc.
Illinois Electric Specialty Co., Chicago, Ill.—Measuring Instruments.
Illinois Zinc Co., Peru, Ill.—Battery Zincs.
Imhauser, E., & Co., 206 Broadway, New York.—Watchmen's Time Detectors.
Imperial Electric Lamp Co., 75 Fulton St., New York.—Arc Lamps, Sockets.
Imperial Porcelain Works, Trenton, N. J.—Insulators, etc.
Incandescent Lamp Adjuster Co., Abingdon, Ill.—Cord Adjusters.
India Rubber Co., Akron, O.—Insulating Tape.
India Rubber & Gutta Percha Insulating Co., 15 Cortlandt St., New York.—Cables, etc.
India Rubber & Insulated Wire Co., Jonesboro, Ind.—Cables.
Indicating Fuse Co., Providence, R. I.—Fuses.

Inglis, Wm., Wire & Iron Works, Detroit, Mich.—Lamp Guards, etc.
International Brass & Electric Co., 76 Beekman St., New York.—Coils.
International Specialty Co., Detroit, Mich.—Trolley Forks, Telephones.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.—Condensers, Telephones, etc.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.—Insulators, Telephones, etc.
Ironclad Resistance Co., Westfield, N. J.—Controllers, Rheostats.
Jackson, Francis E., Orange, N. J.—X-Ray Outfits.
Jackson, Howard, 79 Franklin St., Boston, Mass.—Induction Coils, X-Ray Outfits.
Jaeger Miniature Lamp Mfg. Co., 8th St. & 4th Ave., New York.—Incandescent Lamps.
Jandus Electric Co., Cleveland, O.—Arc Lamps, Motors.
Jantz & Leist Electric Co., 808-810 Elm St., Cincinnati, O.—Dynamos, Motors, etc.
Jefferson Brass Foundry, 209 King St., Brooklyn, N. Y.—Commutator Bars.
Jeffrey Mfg. Co., Columbus, O.—Electric Mine Locomotives.
Jenkins Electric Co., York, Pa.—Magneto Bells, Telephones, etc.
Jenney Electric Mfg. Co., Indianapolis, Ind.—Dynamos, Motors, etc.
Jewell Electrical Instrument Co., 61-63 Union Park Court, Chicago, Ill.—Measuring and Testing Instruments.
Jewell Storage Battery Co., Pittsfield, Mass.—Batteries.
Johns, H. W.-Manville Co., 100 William St., New York.—Insulators, Heating Apparatus, etc.
Johnson Bros., 45 Classon Ave., Brooklyn, N. Y.—Wire Molding.
Johnson & Morton, Utica, N. Y.—Switchboards, Switches, etc.
Jones, J., & Son, 64 Cortlandt St., New York.—Batteries, Switchboards, etc.
Jordan Bros., 74 Beekman St., New York.—Railway Signals.
Jordan, Edw. B., 129 Degraw St., Brooklyn, N. Y.—Telephone Boxes.
K. & B. Company, Philadelphia, Pa.—Cross Arms.
K. & W. Company, Pittsfield, Mass.—Brushes, Spark Arresters, etc.
Kansas City Telephone Mfg. Co., Kansas City, Mo.—Telephones.
Kapp & Miller Co., Rural Hall, N. C.—Brackets and Pins.
Keil, Francis, & Son, 671 E. 163d St., New York.—Bells, Door Openers, etc.
Keller, J., Canton, O.—Motors.
Kelley & Burton Electric Co., 328 W. 4th St., Cincinnati, O.—Telephones.
Kellogg Switchboard & Supply Co., 231 Green St., Chicago, Ill.—Telephones.
Kelly, O. S., Springfield, O.—Conduits.
Kendrick & Davis, Lebanon, N. H.—Fans, Motors, etc.
Kennedy, C. W., Philadelphia, Pa.—Launches.
Kentucky Electrical Co., Owensboro, Ky.—Dynamos, Motors, etc.
Kester Electric Mfg. Co., 250 So. Jefferson St., Chicago, Ill.—Brushes, Commutators.

Keystone Electric Co., Erie, Pa.—Dynamos, Motors, X-Ray Outfits.
Keystone Electric & Mfg. Co., Allegheny, Pa.—Arc Lamps.
Keystone Electric Telephone Co., Pittsburg, Pa.—Switchboards, etc.
Keystone Electrical Instrument Co., 9th St. & Montgomery Ave., Philadelphia, Pa.—Battery Gages, Measuring Instruments, etc.
Kidder, Jerome, Mfg. Co., 820 Broadway, New York.—Batteries, Induction Coils.
Kinsman Block System Co,. 91 Liberty St., New York.—Railway Signals.
Kinsman Electric & Railway Supply Co., 91 Liberty St., New York.—Desk Lights.
Kirk, Arthur, & Son Co., 910 Duquesne Way, Pittsburg, Pa.—Fuses.
Kisinger-Ison Co., Cincinnati, O.—Connectors.
Klein, Mathias, & Son, 87 W. Van Buren St., Chicago, Ill.—Linemen's Tools, etc.
Klemm & Co., 132 No. Fifth St., Philadelphia, Pa.—Fixtures, Fuse Wire, etc.
Knapp Electric & Novelty Co., 511 W. 51st St., New York.—Fans, Motors.
Knott, L. E., Apparatus Co., 14 Ashland Place, Boston, Mass.—Coils, Testing Instruments, etc.
Knowles, C. S., 7 Arch St., Boston, Mass.—Insulators, Switchboards, etc.
Koehn, Alfred, Iron & Bronze Works, 157 W. 29th St., New York.—Fixtures.
Kokomo Telephone & Electric Mfg. Co., Kokomo, Ind.—Telephones, etc.
Krabbe, Christian, 166 Broadway, Brooklyn, N. Y.—Batteries.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.—Brackets and Pins, Panel Boards, etc.
Kraushaar Lamp & Reflector Co., St. Louis, Mo.—Fixtures.
Kuhlman Electric Co., E. High St., Elkhart, Ind.—Static Transformers.
Kurz & Root, Appleton, Wis.—Dynamos, Motors, etc.
Kusel, D. A., Telephone & Electric Mfg. Co., St. Louis, Mo.—Telephones, etc.
Lagerquist, Gust., Minneapolis, Minn.—Dynamos, Motors.
Lake St. Mfg. Co., Chicago, Ill.—Motors.
Lakon Co., Elkhart, Ind.—Static Transformers.
Lamarche's, H., Sons, 81 John St., New York.—Battery Zincs.
Lamb & Co., Kent & Lyons Sts., Grand Rapids, Mich.—Dynamos, etc.
Lamont, G. E., San Francisco, Cal.—Lamps, X-Ray Outfits, etc.
Lancaster, Jas. H., Co., 114 Liberty St., New York.—Igniters, Motors, etc.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.—Insulators, Switchboards, etc.
La Roche, F. A., Co., 652 Hudson St., New York.—Circuit Breakers, Switchboards, etc.
Lasalle Electric Co., 47 W. Lake St., Chicago, Ill.—Batteries.
Latham, E. B., & Co., 39 Vesey St., New York.—Fans.
Lau, Willy H., Pullman Bldg., Chicago, Ill.—Fixtures.
Lawrence & Abel, Buffalo, N. Y.—Commutator Bars.
Lawrence Gas Fixture Mfg. Co., Philadelphia, Pa.—Fixtures.
Lea, Electric Mfg. Co., Elwood, Ind.—Arc Lamps.

Lea-Hooven Mfg. Co., Anderson, Ind.—Arc Lamps.
Leclanche Battery Co., 117 East 131st St., New York.—Batteries, Battery Zincs.
Leeds & Northrup Co., 259 No. Broad St., Philadelphia, Pa.—Measuring and Testing Instruments.
Leonard-Bundy Co., Champlain St., Cleveland, O.—Switches.
Le Valley Vitae Carbon Brush Co., 119-125 E. 42d St., New York.—Brushes.
Lever, C. H., Mfg. Co., Longwood, Ill.—Cord Adjusters, Wire Molding, etc.
Libby Glass Co., Cor. Ash St. & W. & L. E. R. R., Toledo, O.—Arc Light Globes.
Liberty Lamp Co., Malden, Mass.—Incandescent Lamps.
Lincoln Electric Co., 71-73 Ontario St., Cleveland, O.—Dynamos, Motors, etc.
Lindsey, H. E., Electrical Supply Co., 917 Market St., St. Louis, Mo.—Panel Boards, Switches, etc.
Linton, G. E., & Co., Worcester, Mass.—Switchboards, Switches, etc.
Lionel Mfg. Co., 24 Murray St., New York.—Fans.
Little, F. P., Electrical Co., 135 Seneca St., Buffalo, N. Y.—Panel Boards.
Livers & Co., Grottoes, Va.—Telephone Boxes.
Loando Hard Rubber Co., Boonton, N. J.—Insulators.
Locke Insulator Mfg. Co., Victor, N. Y.—Linemen's Tools, Insulators.
Lovell, F. H., & Co., 92 William St., New York.—Insulators, Battery Zincs, etc.
Low Water Electric Alarm Co., Detroit, Mich.—Floats.
Lowell Model Co., Lowell, Mass.—Controllers.
Lowentraut, P., Newark, N. J.—Linemen's Tools.
Luckett, Fred., 30 Boerum Place, Brooklyn, N. Y.—Fixtures.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass. Brackets and Pins, Switchboards, etc.
Lynn Incandescent Lamp Co., Lynn, Mass.—Renewed Incandescent Lamps.
M. & O. Company, Milwaukee, Wis.—Dynamos.
McCandless, H. W., & Co., 67 Park Place, New York.—Incandescent Lamps.
McCarthy Bros., & Ford, Buffalo, N. Y.—Circuit Breakers, Switches, etc.
McCoy, J. B., & Co., 124 W. 33d St., New York.—Fixtures.
McCrea, James, & Co., 67 W. Washington St., Chicago, Ill.—Boring Machines for Electric Wiring.
McCreary Electric Co., 136 Liberty St., New York.—Fixtures, Globes and Shades.
McDermid Mfg. Co., 118 W. Jackson Blvd., Chicago, Ill.—Induction Coils, etc.
McElliott & Becker, 35 State St., Chicago, Ill.—Static Machines, X-Ray Outfits, etc.
McEvoy, C. H., Lowell, Mass.—Connections, etc.
McIntire, C., Co., Newark, N. J.—Fuses.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago, Ill.—Batteries, Transformers, etc.
McKenna Bros. Brass Co., 1st Ave. & Ross St., Pittsburg, Pa.—Cut Outs.
McKenney, Chas. H., & Co., 634 Washington St., Boston, Mass.—Fixtures.

McKenney & Waterbury, 181 Franklin St., Boston, Mass.—Fixtures.
McLeod, Ward & Co., 27 Thames St., New York.—Desk Lights, etc.
McNamara Bros., Fairhaven, Vt.—Switchboards.
McRoy Clay Works, Brazil, Ind.—Conduits.
MacAllen, W. T. C. Co., 338 Congress St., Boston, Mass.—Insulators, Line Materials, etc.
Macbeth, Jas., & Co., 128 Maiden Lane, New York.—Blasting Apparatus.
Macomber & Whyte Rope Co., 21 So. Canal St., Chicago, Ill.—Wire Guards.
MacRae, Hector, Baltimore, Md.—Batteries.
Magnet Wire Co., 141 Broadway, New York.—Wire, etc.
Magneto Electric Co., Amsterdam, New York.—Fire Alarms, Block Signals.
Mallary, W. H., New Castle, Pa.—Cut Outs.
Maltby Lumber Co., Bay City, Mich.—Poles.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.—Fans, Motors, etc.
Manhattan Fire Alarm Co., 19 Barclay St., New York.—Fire Alarms.
Manross, F. N., Forestville, Conn.—Springs.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., New York.—Dynamos, Motors, etc.
Manufacturing & Selling Co., 131 Crosby St., New York.—Batteries.
Marion Pottery Works, 29 Larch Ave., Jersey City, N. J.—Porous Cups.
Marlin & Co., Cleveland, O.—Insulated Wire.
Marshall, Wm., 709 Lexington Ave., New York.—Condensers.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.—Registers, Switches, etc.
Martin Electric Co., 32 Vesey St., New York.—Brush Holders, Dynamos, etc.
Marvel Patents Co., 189 Montague St., Brooklyn, N. Y.—Burglar Alarms.
Marx Zero Sign Works, 160 Superior St., Chicago, Ill.—Signs.
Maryland Telephone Co., Hagerstown, Md.—Telephones.
Maryland Telephone Mfg. Co., Baltimore, Md.—Telephones.
Mason Telephone Pay Station Co., Ludington, Mich.—Telephones, etc.
Massachusetts Chemical Co., 170 Summer St., Boston, Mass.—Insulating Tape.
Massachusetts Fan Co., Waltham, Mass.—Fans.
Massachusetts Mfg. & Electrical Supply Co., Chelsea, Mass.—Telephone Boxes, etc.
Mattern & Findley Mfg. Co., Pittsburg, Pa.—Fixtures.
Matthews, W. N., & Bro., 600 Carleton Bldg., St. Louis, Mo.—Sockets.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.—Battery Zincs.
Mayer, Maxwell M., Electric Co., 216 Centre St., New York.—Dynamos, Motors.
Mayer Pottery Co., Beaver Falls, Pa.—Porous Cups.
Mechanical Appliance Co., Milwaukee, Wis.—Dynamos, Motors
Menchen, Jos., 1237 Broadway, New York.—Stage Arc Lamps, Reflectors, etc.
Menominee Electric Mfg. Co., Menominee, Mich.—Dynamos, Fans, Motors, etc.

Meriam-Abbott Co., Cleveland, O.—Dynamos, Motors.
Merritt Mfg. Co., Middleton, Mass.—Renewed Incandescent Lamps.
Meserve, F. W., Co. Framingham, Mass.—Fixtures.
Metropolitan Switchboard Co., 227 W. 29th St., New York.—Panel Boards, Switches, etc.
Metropolitan Telephone & Electric Co., 610 Wilson Ave., Chicago, Ill.—Telephones.
Meyrowitz, E. B., 104 E. 23d St., New York.—Batteries, X-Ray Outfits.
Mezger, Chas. A., 12 Clinton St., Brooklyn, N. Y.—Junction Boxes.
Miamisburg Electric Co., Miamisburg, O.—Batteries, Commutator Bars, etc.
Mianus Electric Co., Mianus, Conn.—Batteries, Telephones, etc.
Mianus Motor Co., Mianus, Conn.—Motors.
Mica Insulator Co., 218 Water St., New York.—Insulators, etc.
Michigan Bolt & Nut Works, Detroit, Mich.—Insulators, Line Materials, etc.
Michigan Electric Co., Detroit, Mich.—Switchboards.
Michigan Pipe Co., Bay City, Ind.—Conduits.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.—Insulating Machines, Commutators, etc.
Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y.—Springs.
Milwaukee Automatic Fire Service Co., Milwaukee, Wis.—Fire Alarms.
Milwaukee Commutator Co., Milwaukee, Wis.—Commutator Bars.
Milwaukee Electric Co., Milwaukee, Wis.—Dynamos, Motors.
Minerallac Co., 76 Market St., Chicago, Ill.—Insulators.
Minneapolis Electric & Construction Co., Minneapolis, Minn.—Batteries, etc.
Minnesota Electric Co., Minneapolis, Minn.—Switchboards, Telephones, etc.
Mississippi Telephone Co., Hazelhurst, Miss.—Switchboards.
Missouri Electrical Mfg. Co., St. Louis, Mo.—Line Materials, Telephones.
Mitchell-Vance Co., 24th St. & 10th Ave., New York.—Fixtures.
Modern Electric Co., Burlington, Ia.—Annunciators, Fans, Telephones, etc.
Modern Telephone Co., Indianapolis, Ind.—Switchboards.
Mogadore Insulator Co., Mogadore, O.—Insulators, etc.
Moloney Electric Co., 2d & Vine Sts., St. Louis, Mo.—Transformers.
Monarch Electric & Wire Co., 125 So. Clinton St., Chicago, Ill.—Insulated Wire.
Monarch Telephone Mfg. Co., 12 So. Clinton St., Chicago, Ill.—Telephones.
Montauk Fire Detecting Wire Co., 100 Broadway, New York.—Insulated Cord, Fire Alarms.
Moon Mfg. Co., 47 So. Canal St., Chicago, Ill.—Bells, Switchboards, etc.
Moore, Alfred F., 200 No. 3d St., Philadelphia, Pa.—Insulated Cord, etc.
Moore Telephone Mfg. Co., Caro, Mich.—Telephones.
Moore-Edenfield Electric Mfg. Co., Augusta, Ga.—Dynamos, Motors.
Moorehead & Schotte, Kittanning, Pa.—Poles.

Moran & Hastings Mfg. Co., 61 E. Washington St., Chicago, Ill.—Fixtures.
Morgan Engineering Co., Alliance, O.—Controllers.
Morgan Motor Co., 55 Furman St., Brooklyn, N. Y.—Spark Coils.
Morgan-Gardner Electric Co., 2368 Shields Ave., Chicago, Ill.—Dynamos, Motors.
Morgan & Wright, 331 Lake St., Chicago, Ill.—Insulating Tape.
Morreau Gas Fixture Mfg. Co., Cleveland, O.—Fixtures.
Motsinger Device Mfg. Co., Pendleton, Ind.—Dynamos, Igniters.
Mountain State Electrical Co., 55 12th St., Wheeling, W. Va.—Cable Terminals.
Mt. Washington Glass Co., New Bedford, Mass.—Reflectors.
Mueller, H. C., 200 Hanover St., Milwaukee, Wis.—Batteries.
Muhle, H. M. N., Dayton, O.—Batteries.
Mullinix Electric Co., Norwood, O.—Brushes.
Muncie Electric Co., Muncie, Ind.—Electro Magnets.
Munder Electric Co., 26 Cortlandt St., New York.—Incandescent Lamps.
Munson Electric Motor Co., La Porte, Ind.—Motors.
Murdock, W. J., & Co., Chelsea, Mass.—Telephones.
Murray, Jas. J., & Co., Trenton, cor. Allegheny Ave., Philadelphia, Pa.—Globes, Reflectors.
Mutual Electric & Machine Co., Wheeling, W. Va.—Arc Lamps.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., New York.—Batteries, Telephones, etc.
Myers Break Finder Co., 105 So. Warren St., Syracuse, N. Y.—Testing Instruments.
Nagle, G. W., Electric Co., 520 Adams St., Toledo, O.—Linemen's Tools, Measuring Instruments.
Nailler, R. F., Akron, O.—Switchboards, etc.
National Arc Lamp Co., Lorain, O.—Arc Lamps.
National Automatic Fire Alarm Co., Baltimore, Md.—Fire Alarms.
National Battery Co., Buffalo, N. Y.—Batteries.
National Carbon Co., W. Madison & Highland Aves., Cleveland, O.—Batteries, Carbons, etc.
National Conduit & Cable Co., 41 Park Row, New York.—Cables, Conduits, etc.
National Electric Co., Milwaukee, Wis.—Dynamos, Motors, etc.
National Electrical Mfg. Co., Milford, Conn.—Fire Alarms.
National Electrical Supply Co., Milford, Conn.—Annunciators, Telegraph Apparatus, etc.
National Fire Appliance Co., 161 Franklin St., Boston, Mass.—Fire Alarms.
National Incandescent Lamp Co., St. Louis, Mo.—Incandescent Lamps.
National India Rubber Co., Bristol, R. I.—Cables, Insulated Wire, etc.
National Mfg. Co., Worcester, Mass.—Lamp Guards, etc.
National Self-Winding Clock Co., Bristol, Conn.—Time Systems.
National Stamping & Electrical Works, Michigan St. & La Salle Ave., Chicago, Ill.—Dynamos, Motors.
National Vehicle Co., Indianapolis, Ind.—Motors.
National X-Ray Reflector Co., 26 Cortlandt St., New York.—Reflectors.
Naval Electric Co., 95 Liberty St., New York.—Submarine Arc Lamps, Signals, etc.

Nernst Lamp Co., Pittsburg, Pa.—Incandescent Lamps.
New England Butt Co., 304 Pearl St., Providence, R. I.—Insulating Machines.
New England Electric Mfg. Co., West Somerville, Mass.—Cleats, Switches, etc.
New England Electrical Works, Lisbon, N. H.—Insulated Wires, etc.
New England Lamp Co., Malden, Mass.—Incandescent Lamps.
New England Motor Co., Lowell, Mass.—Dynamos, Motors, Fans.
New England Pottery Co., 146 Condor St., Boston, Mass.—Battery Jars, Porous Cups.
Newgard, Henry W., & Co., 87 5th Ave., Chicago, Ill.—Switchboards.
New Haven Novelty Machine Co., New Haven, Conn.—Hangers.
New Jersey Lamp & Bronze Works, New Brunswick, N. J.—Bases.
New York Insulated Wire Co., 114 Liberty St., New York.—Cables, Insulating Tape, etc.
New York Lamp Co., 25 West Broadway, New York.—Renewed Incandescent Lamps.
New York Pottery Co., W. 36th St., New York.—Battery Jars, Porous Cups.
New York Switchboard & Mfg. Co., 516 W. 36th St., New York. Switchboards, Switches, etc.
New York Switch & Crossing Co., Hoboken, N. J.—Track Switches.
New York & Ohio Co., Warren, O.—Globes and Shades, Incandescent Lamps, etc.
Niagara Specialty Works, Manlius, N. Y.—Motors.
Nichols Gas Fixture Co., 56 Boerum St., Brooklyn, N. Y.—Fixtures.
Nieman, A. C., & Co., Milwaukee, Wis.—Igniters, Motors.
Noblett, E. J., Co., 898 W. 35th St., Chicago, Ill.—Telephone Boxes, Wire Molding, etc.
Non-Polarizing Dry Battery Co., 209 Sullivan St., New York.—Batteries.
Norden-Bittner Electric Co., 1402 Broadway, New York.—Signs.
North American Electric Storage Co., Philadelphia, Pa.—Batteries.
North Electric Co., 149-159 St. Clair St., Cleveland, O.—Telephones, Testing Instruments, etc.
Northern Electrical Mfg. Co., Madison, Wis.—Dynamos, Motors, etc.
Northern Engineering Co., 95 Liberty St., New York.—Motors, Switchboard, etc.
Northwestern Electric Co., St. Paul, Minn.—Dynamos, Motors.
Northwestern Storage Battery Co., 465 W. 22d St., Chicago, Ill.—Batteries.
Norton Electrical Instrument Co., Manchester, Conn.—Electro Magnets, Measuring Instruments.
Norton Tool Co., West Park, Ohio.—Linemen's Tools, Line Materials, etc.
Novelty Electric Co., 54 No. 4th St., Philadelphia, Pa.—Batteries, Motors, Switches, etc.
Noxon, C. P. Lee, Syracuse, N. Y.—Igniters, X-Ray Outfits, etc.
Nungesser Electric Battery Co., 27-33 King St., Cleveland, O.—Batteries, Spark Coils.

Nuttall, R. D., Co., Pittsburg, Pa.—Trolley Bases, Trolley Forks.
Ogden-Ross Electric Mfg. Co., Madison, Ind.—Battery Zincs.
Ohio Brass Co., Mansfield, O.—Insulators, Railway Signals, etc.
Ohio Electric Specialty Mfg. Co., 8 W. Main St., Troy, O.—Insulators, Line Materials, etc.
Ohio Electric Works, Cleveland, O.—Batteries, Motors, etc.
Okonite Co., Ltd., 253 Broadway, New York.—Cables, Insulated Cord, etc.
Olds Motor Works, Detroit, Mich.—Motors.
Omnigraph Mfg. Co., 39 Cortlandt St., New York.—Telegraph Instruments.
O'Neill, M. J., St. Paul, Minn.—Fixtures.
Opal Sign Co., 344 Broome St., New York.—Signs.
Ordway, B. F., & Co., Fitchburg Mass.—Trolley Poles.
Ornamental Fixture Co., Cleveland, O.—Fixtures.
Osborn-Morgan Co., Cass Ave., Cleveland, O.—Arc Lamps.
Osburn Flexible Conduit Co., 21 Park Row, New York.—Conduits.
Oshkosh Logging Tool Co., Oshkosh, Wis.—Linemen's Tools, Wire Reels.
Ostrander, W. R., & Co., 22 Dey St., New York.—Batteries, Fans, Bells, etc.
Otis Elevator Co., Yonkers, N. Y.—Motors.
Otto, F. G., & Sons, Jersey City, N. J.—Batteries.
Overbagh & Ayres Mfg. Co., 232 So. Clinton St., Chicago, Ill.—Switchboards, Fixtures, etc.
Oxide Battery Co., 1627 No. 10th St., Philadelphia, Pa.—Batteries.
Oxley & Enos Mfg. Co., 7th Ave. & 16th St., New York.—Fixtures.
P. & W. Electric Co., Lafayette, Ind.—Dynamos, Motors, X-Ray Outfits.
Pacific Electric Co., 127 Main St., La Crosse, Wis.—Desk Lights, Telephones.
Pacific Incandescent Lamp Co., San Francisco, Cal.—Renewed Incandescent Lamps.
Pairpoint Corporation, New Bedford, Mass.—Arc Light Globes.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.—Clutches, Switches, etc.
Palmer, Roscoe A., Roxbury District, Boston, Mass.—Door Openers.
Palmer Electrical Instrument Co., Philadelphia, Pa.—Measuring and Testing Instruments.
Parke, John Y., & Co., 724 Cherry St., Philadelphia, Pa.—Gas Lighting Apparatus.
Parrish Signal Co., Jackson, Mich.—Railway Signals, etc.
Parsell & Weed, 129 W. 31st St., New York.—Motors, Dynamos.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.—Batteries, Telegraph Apparatus, etc.
Partridge Carbon Co., Sandusky, O.—Brushes.
Pass & Seymour, Inc., Solvay, N. Y.—Insulators, Switches, etc.
Patterson Bros., 27 Park Row, New York.—Linemen's Tools.
Pawling & Harnischfeger, Milwaukee, Wis.—Motors.
Pearce, Frederick, 18 Rose St., New York.—Batteries, Switchboards, etc.
Peerless Electric Co., 141 So. Clinton St., Chicago, Ill.—Motors.
Peerless Electric Co., Warren, O.—Fans, Motors, etc.
Peerless Electric Telephone Co., Rio, Wis.—Switchboards, etc.

Pellegrini, A., & Co., 155 W. 29th St., New York.—Fixtures.
Penn. Heat Alarm Co., Pittsburg, Pa.—Fire Alarms.
Pennsylvania Electric Co., Marietta, Pa.—Fans, Telephones.
Pennsylvania Electrical Co., Ltd., Corry, Pa.—Telephones.
Pennsylvania Electrical & Mfg. Co., Irwin, Pa.—Switchboards, Switches, etc.
Pennsylvania Pin & Bracket Co., Pittsburg, Pa.—Brackets and Pins.
Perfection Magneto Co., Anderson, Ind.—Igniters.
Perfection Rail Bond Co., 1503 Monadnock Blk., Chicago, Ill.—Rail Bonds.
Perfection Supply Co., 621 Broadway, New York.—Brushes, etc.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.—Hangers, Switches, etc.
Peru Electric Mfg. Co., Peru, Ind.—Insulators, Switchboards.
Peterson, John L., & Co., Galesburg, Ill.—Clutches, Rail Bonds.
Pettingell-Andrews Co., Atlantic Ave. & Pearl St., Boston, Mass.—Brackets and Pins, Mast Arms.
Phelan, D. W., 277 Broadway, New York.—Poles.
Phenix Electrical Works, 203 Washington St., Brooklyn, N. Y.—Batteries.
Philadelphia City Pottery Co., 2715 Edgemont St., Philadelphia, Pa.—Porous Cups.
Philadelphia Electric Construction Co., Philadelphia, Pa.—Induction Coils.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philadelphia, Pa.—Brushes, Rheostats, etc.
Phillips, E., & Sons, South Hanover, Mass.—Battery Zincs.
Phillips Insulated Wire Co., Pawtucket, R. I.—Insulated Cord, Wire, etc.
Phoenix Electric Mfg. Co., Mansfield, O.—Armature Cores, Switchboards, etc.
Phoenix Glass Co., Pittsburg, Pa.—Arc Light Globes, etc.
Piedmont Electric Co., Asheville, N. C.—Telephones.
Pierce, C. L., Jr., Chicago, Ill.—Brackets and Pins.
Pignolet, Louis M., 78 Cortlandt St., New York.—Batteries, Measuring Instruments.
Piqua Trolley Ear Co., Piqua, O.—Reflectors.
Pittsburg Brass Co., Allegheny, Pa.—Reflectors.
Pittsburg Construction & Engineering Co., Pittsburg, Pa.—Panel Boards.
Pittsburg Electrical & Machine Works, Pittsburg, Pa.—Carbons, Switches, etc.
Pittsburg Glass Co., Pittsburg, Pa.—Battery Jars.
Pittsburg Lamp, Brass & Glass Co., Pittsburg, Pa.—Globes and Shades.
Pittsburg Locomotive & Car Works, Allegheny, Pa.—Mine Locomotives.
Pittsburg Transformer Co., Pittsburg, Pa.—Transformers.
Pittsburg Sewer Pipe & Conduit Co., Pittsburg, Kan.—Conduits.
Pittsburg Trolley Pole Co., Pittsburg, Pa.—Trolley Poles.
Pittsburgh Switch & Signal Co., 1511-1515 Liberty Ave., Pittsburg, Pa.
Pittsburgh Reduction Co., Pittsburg, Pa.—Aluminum Wire.
Platt, O. S., Mfg. Co., Bridgeport, Conn.—Switches.
Plaut, L., & Co., 432 E. 43d St., New York.—Fixtures.

Plume & Atwood Mfg. Co., Waterbury, Conn.—Bells, Wire Guards, etc.
Plummer, Ham & Richardson, 619 Main St., Worcester, Mass. —Telephones.
Pneumatic Signal Co., Rochester, New York.—Railway Signals.
Polacheck, Chas., & Bros. Co., 429 Chestnut St., Milwaukee, Wis.—Fixtures, Desk Lights, etc.
Portable Electric House Lamp Co., 10 Cortlandt St., New York.—Lanterns.
Portable Electric Power & Light Co., 188 R. R. Ave., Jersey City, N. J.—Lanterns.
Porter Battery Co., Waukeegan, Ill.—Batteries.
Porter Cedar Co., Saginaw, Mich.—Poles.
Portland Co., Inc., Portland, Me.—Dynamos, Motors, etc.
Potomac Terra Cotta Co., Washington, D. C.—Conduits.
Pratt & Whitney Co., Hartford, Conn.—Copper Wire.
Prentiss Clock Improvement Co., 49 Dey St., New York.—Clock Switches, Floats, etc.
Prescott, J. R., & Son, Webster, Mass.—Battery Zincs.
Pressed Steel Tack Co., Milwaukee, Wis.—Bells.
Prime Western Zinc Co., 1116 Sycamore St., Terre Haute, Ind.—Battery Zincs.
Pringle, W. T., 112 No. 12th St., Philadelphia, Pa.—Switchboards, Switches, etc.
Prismatic Electric Sign Co., Syracuse, N. Y.—Signs.
Prometheus Electric Co., 39 Cortlandt St., New York.—Heating apparatus, Rheostats.
Prosser, Thos., & Son, 15 Gold St., New York.—Resistance Wire.
Protected Rail Bond Co., Philadelphia, Pa.—Rail Bonds.
Providence Gas Burner Co., 25 Blount St., Providence, R. I.—Incandescent Lamp Bases.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.—Mine Locomotives.
Pullen, Leon W., Electrical Co., 618 Chestnut St., Philadelphia, Pa.—Batteries, Telephones. *See adv. page 72.*
Putnam, J. E., & Co., Rochester, N. Y.—Rheostats.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philadelphia, Pa.—Dynamos, Motors, etc.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.—Measuring Instruments.
Randall-Loudon Electrical Co., Memphis, Tenn.—Push Buttons, Telephones.
Rauscher, John, St. Paul, Minn.—Push Buttons.
Ravenna Carbon Works, Ravenna, Ohio.—Batteries, Brushes, etc.
Rawson Electric Co., Elyria, Ohio.—Lightning Arresters, Telephones.
Rawson & Evans, 151-153 W. Washington St., Chicago, Ill.—Signs.
Raymond Mfg. Co., Corry, Pa.—Springs.
Reading Gas & Electric Fixture Co., 133 Pearl St., Reading, Pa.—Panel Boards, Switches, etc.
Reading Hardware Co., Reading, Pa.—Push Buttons.
Reconstructed Granite Co., 14 Dey St., New York.—Insulators.
Reek, John, Electrical Works, Camden, Mich.—Dynamos, Motors, etc.
Reineke-Wilson Co., Pittsburg, Pa.—Fixtures.

Reisinger, Hugo, 11 Broadway, New York.—Carbons.
Reliance Electric Co., Milwaukee, Wis.—Dynamos, Motors.
Reliance Mfg. Co., Philadelphia, Pa.—Fixtures.
Remy Electric Co., Anderson, Ind.—Igniters, etc.
Re-new Lamp Co., 126 State St., Boston, Mass.—Renewed Incandescent Lamps.
Renim Specialty Co., 176 Federal St., Boston, Mass.—Switch Boxes, Push Buttons, etc.
Reserve Fund & Mfg. Co., Cleveland, Ohio.—Fixtures.
Revere Rubber Co., 77 Bedford St., Boston, Mass.—Insulating Tape.
Reynolds Electric Flasher Mfg. Co., 221 5th Av., Chicago, Ill. Batteries.
Rhode Island Braiding Machine Co., Providence, R. I.—Insulating Machines.
Rhode Island Electric Works, Pawtucket, R. I.—Insulated Wire.
Rhode Island Telephone & Electric Co., 24 Calendar St., Providence, R. I.—Batteries, Motors, etc.
Ricard Boiler & Engine Works, Toledo, Ohio.—Dynamos, Motors.
Rich, Chas. E., 943 De Kalb Ave., Brooklyn, N. Y.—Batteries.
Richardson, A. M., & Co., 317 W. Broadway, New York.—Batteries.
Richmond Electric Co., Richmond, Va.—Dynamos, Motors.
Richter Electric Co., Camden, N. J.—Dynamos, Motors.
Ridgway Dynamo & Engine Co., Ridgway, Pa.—Dynamos, Motors.
Ritchie, C. S., & Sons, Brookline, Mass.—Spark Coils.
Rittenhouse-Miller Co., Witherspoon Bldg., Philadelphia, Pa.—Conduits.
Ritter Electrical Co., 200 Sycamore St., Cincinnati, O.—Arc Lamps.
Robbins & Myers Co., Springfield, O.—Dynamos, Motors, etc.
Roberts, Geo., Pittsburg, Pa.—Wire Reels.
Roberts, H. C., Electric Supply Co., 831 Arch St., Philadelphia, Pa.—Fixtures.
Robinson, J. J., & Co., Bloomsburg, Pa.—Wire Molding.
Roche, William, 42 Vesey St., New York.—Batteries, Igniters.
Rochester Electric Motor Co., Rochester, N. Y.—Dynamos, Motors.
Rochester Electrical Mfg. Co., 76 Exchange St., Rochester, N. Y.—Cut Outs.
Rodefer Bros., Bellaire, O.—Porous Cups.
Roebling's, John A., Sons Co., Trenton, N. J.—Rail Bonds, Insulated Wire, etc.
Roeser & Sommer, 386 Second Av., New York.—Fixtures.
Rolfe Electric Co., 50 W. Jackson B'lv'd., Chicago, Ill.—Lightning Arresters, Search Lights.
Rooney-Westbury Electric Lamp Co., 154 East 23d St., New York.—Incandescent Lamps.
Ross-Meehan Foundry Co., Chattanooga, Tenn.—Bells.
Roth Bros. & Co., 27 So. Clinton St., Chicago, Ill.—Dynamos, Motors.
Royal Electric Co., Peoria, Ill.—Dynamos, Transformers.
Royal Incandescent Lamp Co., Cleveland, O.—Incandescent Lamps.
Royle, Chas., 596 Kent Ave., Brooklyn, N. Y.—Fixtures.
Rumsey Electric Co., Detroit, Mich.—Motors, Switchboards.

Ruprecht Electric Co., Cleveland, O.—Dynamos, X-Ray Outfits.
Rusby, J. S., Nutley, N. J.—Cut Outs.
Rushmore Dynamo Works, Plainfield, N. J.—Search Lights.
Russell Electric Mfg. Co., Providence, R. I.—Mast Arms.
Russell & Erwin Mfg. Co., New Britain, Conn.—Push Buttons.
Russell-Tomlinson Electric Co., Danbury, Conn.—Telephones.
S. & H. Electrical Co., Skaneateles, N. Y.—Dynamos, Motors.
Safety Arc Lamp Hanger & Improvement Co., St. Joseph, Mo. Hangers.
Safety Armorite Conduit Co., Frick Bldg., Pittsburg, Pa.—Conduits.
Safety Electric Switch Co., 144 Pine St., Providence, R. I.—Switchboards, Switches, etc.
Safety Insulated Wire & Cable Co., 118 Liberty St., New York. Cables, Insulated Cord, etc.
Safford Arc Lamp Mfg. Co., Buffalo, N. Y.—Arc Lamps.
St. Louis Brass Mfg. Co., St. Louis, Mo.—Fixtures.
Salem Glass Works, Salem, N. J.—Battery Jars, Porous Cups.
Sandusky Supply & Construction Co., 513-515 Market St., Sandusky, O.—Batteries.
Sargent & Co., 151 Leonard St., New York.—Push Buttons.
Saulpaugh's, Jas. M., Sons, 706 East 12th St., New York.—Wire Molding.
Sawyer-Man Electric Co., 510 W. 23d St., New York.—Incandescent Lamps.
Schaefer Bros., 12 Julius St., Chicago, Ill.—Switchboards, etc.
Scheidel, W., & Co., Chicago, Ill.—Insulators, etc.
Schmidt, Lambert, Telephone Mfg. Co., Weehawken, N. J.—Switchboards, etc.
Schoenman Electric Mfg. Co., Allegheny, Pa.—Switchboards.
Schuetz, Charles, Newark, N. J.—Cord Adjusters.
Schwalm, Geo. F., & Co., Harrison, N. J.—Renewed Incandescent Lamps.
Scott Automobile Co., St. Louis, Mo.—Batteries.
Scott Bros. Electric Co., Detroit, Mich.—Lamp Guards, etc.
Scoville Mfg. Co., Waterbury, Conn.—Bases, Copper Wire.
Scranton Fire Brick & Conduit Co., Scranton, Pa.—Conduits.
Sechrist, Albert, Mfg. Co., Denver, Colo.—Switches.
See, Horace, 1 Broadway, New York.—Steamship Signals.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.—Switchboards, etc.
S. E. I. Co., Hall & McChesney Bldg., Syracuse, N. Y.—Measuring Instruments.
Self-Winding Clock Co., 161 Grand Av., Brooklyn, N. Y.—Time Systems.
Sellner Gas & Electric Fixture Mfg. Co., 703-709 Locust St., St. Louis, Mo.—Fixtures.
Sence, L., & Son, 112 University Place, New York.—Batteries.
Seymour, A. P., Syracuse, N. Y.—Brush Holders.
Seymour Mfg. Co., Seymour, Conn.—Copper Wire, etc.
Shadowless Arc Light Co., Pittsburg, Pa.—Arc Lamps.
Shapire & Aronson, 67 Centre St., New York.—Fixtures.
Shedd Electric & Mfg. Co., Roselle, N. J.—Fans.
Sheehan, W. M., & Co., 136 Liberty St., New York.—Switchboards.
Sheffield Car Co., Three Rivers, Mich.—Dynamos, Motors.
Shelby Electric Co., Shelby, O.—Incandescent Lamps.
Shelby Steel Tube Co., Pittsburg, Pa.—Trolley Poles.
Shreve, Crump & Low Mfg. Co., Boston, Mass.—Fixtures.

Shug Electric Mfg. Co., Detroit, Mich.—Spark Coils.
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.—Fire Alarms, Telephones, etc.
Silver City Iron Works, Meriden, Conn.—Fixtures.
Simmons, John, Co., 106 Centre St., New York.—Poles.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.—Heating Apparatus, Rheostats.
Simplex Electrical Co., 110 State St., Boston, Mass.—Cables, Insulated Wire.
Simplex Interior Telephone Co., Cincinnati, O.—Telephones.
Sioux City Brass Works, Sioux City, Iowa.—Switchboards.
Sipp Electric & Machine Co., Paterson, N. J.—Switchboards.
Slack, E. T., Sandusky, O.—Burglar Alarms.
Smith, H. Julius, Electric Fuse Co., Pompton Lake, N. J.—Blasting Apparatus.
Smith, Theodore, 151 Throop St., Chicago, Ill.—Cord Adjusters.
Smith, Thos., & Co., Worcester, Mass.—Armature Disks.
Smith, W. A., Grand Rapids, Mich.—Igniters.
Smith Electrical Engineering Co., Watertown, N. Y.—Arc Lamps.
Smith Storage Battery Co., 5 Frederick St., Binghamton, N. Y.—Batteries.
Smith & Hemenway Co., 296 Broadway, New York.—Linemen's Tools.
Solar Carbon Works, Ravenna, O.—Carbons, Batteries, etc.
Sorensen Mfg. Co., Ravenna, O.—Static Machines, X-Ray Outfits.
South Bend Spark Arrester Co., South Bend, Ind.—Spark Arresters.
Specialty Fire Alarm Electrical Signal Co., 18 Rose St., New York.—Fire Alarms.
Specialty Machine Co., 61 Middle St., Cleveland, O.—Igniters.
Speer Carbon Co., St. Marys, Pa.—Brushes, Carbons.
Spencer, I. S., Sons, Guilford, Conn.—Push Buttons.
Spencer Electrical Co., 163 Greenwich St., New York.—Telephones.
Sperry Electric Railway Co., Cleveland, O.—Motors.
Spies Electric Co., 87 W. Van Buren St., Chicago, Ill.—Bells.
Splitdorf, C. F., 17 Vandewater St., New York.—Batteries, Electro Magnets, etc.
Sprague Electric Co., 527 W. 34th St., New York.—Dynamos, Motors, etc.
Springfield Electrical Mfg. Co., Springfield, Mass.—Desk Lights, Switchboards, etc.
Standard Arm & Pin Co., Laurel, Miss.—Brackets and Pins, Cross Arms.
Standard Carbon Co., Cleveland, O.—Batteries, Carbons.
Standard China Works, Trenton, N. J.—Insulators, etc.
Standard Electric Mfg. Co., Niles, O.—Incandescent Lamps, Transformers.
Standard Electric Signal Co., 107 State St., Rochester, N. Y.—Fire Alarms.
Standard Electric Time Co., Waterbury, Conn.—Battery Gages, Time Systems.
Standard Gas Fixture Co., Bound Brook, N. J.—Fixtures.
Standard Paint Co., 100 William St., New York.—Insulating Tape.

Standard Pole & Tie Co., 44 Broad St., New York.—Brackets and Pins, Poles, Cross Arms. *See adv. page 71.*
Standard Telephone & Electric Co., Madison, Wis.—Telephones, etc.
Standard Underground Cable Co., Pittsburg, Pa.—Cables, Junction Boxes, etc.
Standard Vitrified Conduit Co., 39 Cortlandt St., New York. Conduits, Insulators.
Standard Welding Co., Cleveland, O.—Welding Machines.
Stanley Electric Mfg. Co., Pittsfield, Mass.—Dynamos, Motors, etc.
Stanley Instrument Co., Great Barrington, Mass.—Measuring Instruments.
Stanley & Patterson, Inc., 93 Liberty St., New York.—Annunciators, Motors, etc.
Star Brass Works, Kalamazoo, Mich.—Trolley Forks.
Star Dynamo Works, Jefferson City, Mo.—Dynamos, Motors.
Star Electric Co., Binghamton, N. Y.—Annunciators, Fire Alarms, etc.
Star Porcelain Co., Trenton, N. J.—Insulators, etc.
Starr Bros., East Hampton, Conn.—Bells.
Starrett, L. S., Co., Athol, Mass.—Copper Wire.
Steele & Johnson Mfg. Co., Waterbury, Conn.—Shade Rollers.
Stephens, Geo. M., 15 Chardon St., Boston, Mass.—Fire Alarms.
Stephens, Wilmot, Binghamton, N. Y.—Linemen's Tools.
Sterion Copper, Brass & Bronze Co., 63 N. Ashland Ave., Chicago, Ill.—Commutator Bars, Switches, etc.
Sterling, W. C., & Son, Monroe, Mich.—Cross Arms, Poles.
Sterling Electric Co., Lafayette, Ind.—Batteries, etc.
Sterling Electric Motor Co., Dayton, O.—Dynamos, Motors, etc.
Sterling Electrical Mfg. Co., Warren, O.—Renewed Incandescent Lamps.
Sterling-Meaker Co., 420-422 Ogden St., Newark, N. J.—Line Materials, etc.
Steward, D. M., Mfg. Co., Chattanooga, Tenn.—Insulators.
Stewart, Frank H., & Co., 35 N. 7th St., Philadelphia, Pa.—Cord Adjusters. *See adv. page 72.*
Stoddard Telephone Construction Co., Monroe, Mich.—Telephones, Testing Instruments, etc.
Stokes Rubber Co., Trenton, N. J.—Battery Jars.
Storage Battery Supply Co., 239 East 27th St., New York.—Batteries, Panel Boards.
Storsberg, F., 20 Atlantic St., Newark, N. J.—Fixtures.
Stow Mfg. Co., Binghamton, N. Y.—Dynamos, Motors.
Straus Rubber & Tire Co., 351 East 61st St., New York.—Insulating Tape.
Strobel & Wilken Co., 591 Broadway, New York.—Lanterns.
Strock, S. C., 11 Broadway, New York.—Poles.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.—Linemen's Tools, Insulators, etc.
Strowger Automatic Telephone Exchange, The Rookery, Chicago, Ill.—Switchboards, etc.
Strutt, Wm., Paterson, N. J.—Fixtures.
Studebaker Bros. & Co., South Bend, Ind.—Motors.
Sturtevant, B. F., Co., Jamaica Plain, Mass.—Fans, Dynamos.
Sumter Telephone Mfg. Co., Sumter, S. C.—Telephone Boxes, Telephones, etc.

Sunbeam Incandescent Lamp Co., 259 So. Clinton St., Chicago, Ill.—Incandescent Lamps.
Superior Telephone Mfg. Co., Trenton, Mo.—Telephones.
Supply Mfg. Co., Pittsburg, Pa.—Switchboards, etc.
Swan Electric Mfg. Co., 59 William St., New York.—Batteries.
Swedish-American Telephone Co., 88 W. Jackson Blvd., Chicago, Ill.—Telephones.
Swett, A. L., Iron Works, Medina, N. Y.—Dynamos, Motors.
Swett & Lewis Co., 18 Boylston St., Boston, Mass.—Battery Jars, X-Ray Outfits, etc.
Swope, Henry R., 120 N. 7th St., Philadelphia, Pa.—Fans, Motors.
Syracuse Arc Lamp Co., Syracuse, N. Y.—Arc Lamps.
Tardie, E. J., 221 6th Ave., New York.—Batteries.
Taunton-New Bedford Copper Co., Taunton, Mass.—Copper Wire.
Taylor Signal Co., 1738-1756 Elmwood Ave., Buffalo, N. Y.—Railway Signals.
Taylor & Hough, St. Paul, Minn.—Dynamos, Motors.
Tea Tray Co., Mulberry & Murray Sts., Newark, N. J.—Fixtures, Reflectors.
Telephone, Burglar & Fire Alarm Co., Rochester, N. Y.—Burglar Alarms.
Telephone Mfg. Co., Sumter, S. C.—Telephones, etc.
Teleseme Electric Mfg. Co., 51 W. 24th St., New York.—Annunciators, Telegraph Apparatus, etc.
Tenney, A. E., Mfg. Co., Pawtucket, R. I.—Arc Lamps.
Terre Haute Gas Fixture Co., Terre Haute, Ind.—Fixtures.
Texas Arm & Pin Co., Beaumont, Tex.—Brackets, Pins, etc.
Textile Machine Works, Inc., Reading, Pa.—Insulating Machines.
Thackara Mfg. Co., Philadelphia, Pa.—Fixtures.
Thermo Electric Co., 41 Park Row, New York.—Generators.
Thomas, E. R., Motor Co., Buffalo, N. Y.—Igniters.
Thomas, R., & Sons, Co., East Liverpool, O.—Insulators, etc.
Thompson Electric Works, 346 Wabash Ave., Chicago, Ill.—Dynamos, Motors.
Thompson-Bonney Co., 45 York St., Brooklyn, N. Y.—Motor Generators, Panel Boards, etc.
Thomson Electric Welding Co., Lynn, Mass.—Motor Generators, Welding Machines.
Thordarson, C. H., 153 So. Jefferson St., Chicago, Ill.—Insulated Wire.
Thornton, G. C., 62 Reade St., New York.—Batteries.
Thornton Electric Works, 3 E. 14th St., New York.—Batteries, Spark Coils.
Thorp, W. Grant, Newburgh, N. Y.—Batteries. X-Ray Outfits.
Three Rivers Electric Co., Three Rivers, Mich.—Dynamos, Motors, etc.
Thresher Electric Co., Dayton, O.—Dynamos, Motors, etc.
Toerring, C. J., Co., 1035 Ridge Ave., Philadelphia, Pa.—Arc Lamps.
Toledo Chandelier Mfg. Co., Toledo, O.—Fixtures.
Toledo Electric Lamp Co., Toledo, O.—Arc Lamps.
Toler, John, Sons, & Co., 108 Adams St., Newark, N. J.—Junction Boxes.
Tomlinson & Greene, 260 W. Broadway, New York.—Wire Molding.
Torbensen Gear, Inc., Bloomfield, N. J.—Plugs, Spark Coils.

Tower-Binford Electric & Mfg. Co., 721 E. Main St., Richmond, Va.—Switchboards, Switches.
Towers Pin & Bracket Co., Ellijay, Ga.—Brackets and Pins.
Towle, Geo. C., Mfg. Co., Lancaster, Pa.—Dynamos, Fans, Motors.
Trenton Porcelain Co., Mead St., Trenton, N. J.—Cleats.
Tri City Electric Co., Davenport, Iowa.—Annunciators.
Tri Light Electric Co., Birmingham, Ala.—Sockets.
Tripp & Co., 111 Fifth Ave., Chicago, Ill.—Signs.
Triumph Electric Co., 610 Raymiller St., Cincinnati, O.—Dynamos, Motors, etc.
Trumbull Electric Co., Plainville, Conn.—Cut Outs, Switches.
Tucker, Frank S., & Co., Boston, Mass.—Push Buttons, Telephones.
Tucker Electrical Construction Co., 35 So. William St., New York.—Telephones.
Turner Brass Works, Franklin & Michigan Sts., Chicago, Ill. Clutches, Brush Holders.
Twentieth Century Lamp Works, 1037 Walnut St., Philadelphia, Pa.—Incandescent Lamps.
Union Electric Porcelain Works, Trenton, N. J.—Insulators, etc.
Union Glass Co., Somerville, Mass.—Arc Light Globes.
Union Hardware Co., Torrington, Conn.—Push Buttons.
Union Porcelain Works, 300 Eckford St., Brooklyn, N. Y.—Insulators.
Union Railway Supply Co., 1633 Real Estate Trust Bldg., Philadelphia, Pa.—Trolley Poles.
Union Storage Battery Co., Cleveland, O.—Batteries.
Union Switchboard Co., Erie, Pa.—Switchboards.
Union Switch & Signal Co., Swissvale, Pa.—Railway Signals.
United Electric Heating Co., 260 Randolph St., Detroit, Mich. Heating Apparatus.
United States Automatic Telephone Co., 116 Nassau St., New York.—Telephones, etc.
United States Battery Co., New Rochelle, N. Y.—Batteries.
United States Carbon Co., Cleveland, O.—Brushes, Carbons.
United States Electric Clock Co., 304 Hudson St., New York. Time Systems.
United States Electric Contracting Co., Syracuse, N. Y.—Brushes.
United States Electric Railway Supply Co., Detroit, Mich.—Trolley Bases.
United States Electric Signal Co., Watertown, Mass.—Railway Signals.
United States Fire & Police Telegraph Co., 381 Albany St., Boston, Mass.—Fire Alarms.
United States Glass Mfg. Co., Pittsburg, Pa.—Battery Jars.
United States Incandescent Lamp Co., St. Louis, Mo.—Incandescent Lamps.
United States Telephone Mfg. Co., Butler, Pa.—Telephones.
United Telepherage Co., 20 Broad St., New York.—Telpherage Systems.
Universal Electric Stage Lighting Co., 1393-5 Broadway, New York.—Stage Lamps, Signs, etc.
Utica Drop Forge & Tool Co., Utica, N. Y.—Linemen's Tools.
Utica Electrical Mfg. & Supply Co., Utica, N. Y.—Commutators.

Utica Fire Alarm Telegraph Co., Utica, N. Y.—Magneto Bells, Fire Alarms, etc.
Vail Storage Battery Co., 199 Chambers St., New York.—Batteries.
Vallee Bros. Electrical Co., 625 Arch St., Philadelphia, Pa.—Gas Lighting Apparatus, etc.
Van Dorn-Elliott Electric Co., Cleveland, O.—Commutators.
Van Houten & Tenbroeck Co., 300 Fourth Ave., New York.—Batteries, Static Machines.
Van Loan, I. S., Co., 465 Greenwich St., New York.—Railway Motors.
Van Namee, G. L., Mfg. Co., Gouverneur, N. Y.—Fixtures.
Van Nort Mfg. Co., St. Louis, Mo.—Spark Coils.
Van Wagoner & Williams Hardware Co., Cleveland, O.—Commutator Bars.
Varley Duplex Magnet Co., Inc., Providence, R. I.—Coils, Electro Magnets.
Varney Electrical Supply Co., Indianapolis, Ind.—Telephones.
Vesta, Accumulator Co., 226 State St., Chicago, Ill.—Batteries, Lanterns.
Viaduct Electric Co., Baltimore, Md.—Telegraph Apparatus.
Viaduct Mfg. Co., Baltimore, Md.—Insulators, Telephones, etc.
Victor Electric Co., 55-61 Market St., Chicago, Ill.—Dynamos, Motors, etc.
Vierkant, H. C., Tarrytown, N. Y.—Fire Alarms.
Vindex Electric Co., Spring St. Viaduct, Aurora, Ill.—Cut Outs, Transformers.
Voltamp Electric Mfg. Co., Baltimore, Md.—Batteries.
Vosburgh, W. C., Mfg. Co., 269 State St., Brooklyn, N. Y.—Fixtures.
Vought-Berger Co., La Croise, Wis.—Telephone Booths, Telephones, etc.
Vulcanized Rubber Co., 110 Grand St., New York.—Cord Adjusters, Insulators, etc.

Wabash Cabinet Co., Wabash, Ind.—Telephone Boxes.
Waclark Wire Co., 49 Wall St., New York.—Cables, Copper Wire.
Wagner, R. V., & Co., 308 Dearborn St., Chicago, Ill.—Static Machines, X Ray Outfits, etc.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.—Dynamos, Motors, etc.
Wagner & Hatch Motor Co., 308 Dearborn St., Chicago, Ill.—Dynamos.
Wagner Palmros Mfg. Co., Fairmont, W. Va.—Mine Locomotives.
Wagor, P. R., Mfg. Co., 56 Harrison Ave., Springfield, Mass.—Lamp Guards.
Waite & Bartlett Mfg. Co., 217 East 23d St., New York.—Static Machines, X- Ray Outfits.
Wakeman, L. B., 39-43 W. Washington St., Chicago, Ill.—Telephones.
Walker Electric Co., Noble St., Philadelphia, Pa.—Switchboards, Switches, etc.
Wall, P., Mfg. Co., Allegheny, Pa.—Balls.
Walls, C. M., & Co., Worcester, Mass.—Mast Arms.
Walsh, Owen, 19 Roosevelt St., New York.—Annunciators, Push Buttons, etc.
Waltham Clock Co., Waltham, Mass.—Time Systems.

Walworth & Neville Mfg. Co., Old Colony Bldg., Chicago, Ill.—Conduits.
Wappler Electric Controller Co., 177 East 87th St., New York. Batteries, Rheostats.
Ward, Leonard, Electric Co., Bronxville, N. Y.—Circuit Breakers, etc.
Warner Electric Co., Muncie, Ind.—Dynamos, Motors, etc.
Warren Electric Mfg. Co., Sandusky, O.—Dynamos.
Warren Electric & Specialty Co., Warren, O.—Fans, Incandescent Lamps, etc.
Washington Carbon Co., 64 Conestoga Bldg., Pittsburg, Pa.—Carbons.
Waterbury Battery Co., Waterbury, Conn.—Batteries, Battery Zincs.
Waterbury Mfg. Co., Waterbury, Conn.—Bells, Fixtures, etc.
Watts Electric Co., 701 Indiana St., Indianapolis, Ind.—Dynamos, Motors.
Webster, Geo., Christiana, Pa.—Cord Adjusters.
Wentworth & Blake, 19 High St., Boston, Mass.—Telephones.
West Electric Co., Mt. Vernon, N. Y.—Telephones.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.—Dynamos, Motors, etc.
Western Gas Fixture Co., Toledo, O.—Fixtures.
Western Reflector Co., 315 Lake St., Chicago, Ill.—Signs, Reflectors.
Western Storage Battery Co., Indianapolis, Ind.—Batteries.
Western Telephone Mfg. Co., 75 W. Jackson Blvd., Chicago, Ill.—Telephones, etc.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.—Dynamos, Motors, etc.
Westinghouse Machine Co., Pittsburg, Pa.—Igniters, Mine Locomotives, etc.
Westinghouse Traction Brake Co., 26 Cortlandt St., New York.—Heating Apparatus.
Weston, Wm. H., & Co., 1303 Buttonwood St., Philadelphia, Pa. Switchboards, Switches, etc.
Weston Electrical Instrument Co., Waverly Park, Newark, N. J.—Measuring Instruments, etc.
Whalen, J. B., Co., Sycamore, Ill.—Linemen's Tools.
Wheeler, M. B., Electric Co., Grand Rapids, Mich.—Telephones.
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.—Fixtures.
Whitall, Tatum Co., 410 Race St., Philadelphia, Pa.—Battery Jars.
White, H. P. Co., Philadelphia, Pa.—Switchboards, Switches.
White, J. H., Mfg. Co., 127 No. 10th St., Brooklyn, N. Y.—Desk Lights, Fixtures, etc.
White, O. C., Co., Worcester, Mass.—Fixtures, Desk Lights.
White, S. S., Dental Mfg. Co., 1130 Chestnut St., Philadelphia, Pa.—Batteries.
Whitney Electrical Instrument Co., 203 Broadway, New York. Battery Gages, Measuring Instruments, etc.
Whitney Glass Works, 227 So. Front St., Philadelphia, Pa.—Insulators, Battery Jars.
Wieland Electric Co., Duluth, Minn.—Desk Lights.
Wilcox, L. M., Newark, N. J.—Annunciators, Burglar Alarms.
Wilhelm, H., 70 Frost St., Brooklyn, N. Y.—Door Openers, Push Buttons.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.—Telephone Boxes, Motors, etc.

Willard Storage Battery Co., 49 Wood St., Cleveland, O.—Batteries.
Williams, E. A., & Son, 105 Plymouth St., Jersey City, N. J.—Commutator Bars.
Williams, E. Q., 316 E. Water St., Syracuse, N. Y.—Igniters, X-Ray Outfits, etc.
Williams, P. G., 6 Barclay St., New York.—Batteries.
Williams Electric Co., Cleveland, O.—Magneto Bells, Telephones.
Williams-Abbott Electric Co., Cleveland, O.—Magneto Bells, Telephones.
Williams, Brown & Earle, 1918 Chestnut St., Philadelphia, Pa. Batteries, Static Machines, etc.
Williamson, R., & Co., 52 E. Lake St., Chicago, Ill.—Fixtures.
Williamson & Co., Allegheny, Pa.—Railway Signals.
Williamsport Wooden Pipe Co., Williamsport, Pa.—Conduits.
Willyoung & Gibson Co., 40 W. 13th St., New York.—Condensers, Measuring Instruments, X-Ray Outfits.
Wilmarth, T. W., Chicago, Ill.—Fixtures.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.—Bells.
Wirt Electric Co., 4523 Tacony Rd., Philadelphia, Pa.—Brushes, Rheostats.
Witherbee Igniter Co., 25 W. 33d St., New York.—Igniters.
Wolfe Bros. & Dillingham, Denver, Colo.—Trolley Bases.
Wolff, R. H., & Co., Ft. East 118th St., New York.—Resistance Wire.
Woonsocket Spool & Shuttle Co., Woonsocket, R. I.—Wire Reels.
Worcester, C. H., Co., Marinette, Wis.—Poles.
World Mfg. Co., 505 Elm St., Cincinnati, O.—Batteries.
Wormser Glass Co., Pittsburg, Pa.—Insulators.
Wotton Electric & Mfg. Co., Atlanta, Ga.—Annunciators, Condensers.
Wright & Craycroft, 518 West 21st St., New York.—Wire Molding.
Wurdack, Wm., St. Louis, Mo.—Switchboards, etc.
Wyckoff Pipe & Creosoting Co., Inc., Stamford, Conn.—Conduits, Cross Arms, etc.
Yesbera Mfg. Co., Toledo, O.—Telephone Booths.
Yonkers Specialty Co., Yonkers, N. Y.—Hangers.
York Electric & Mach. Co., York, Pa.—Panel Boards, Switches, etc.
Yost Electric Mfg. Co., Toledo, O.—Sockets.
Yurgae Signalphone Mfg. Co., Milwaukee, Wis.—Burglar Alarms, Telephones.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.—Telegraph Instruments, etc.
Zimdars & Hunt, 52 Grove St., New York.—Switchboards, Switches.
Zogg, N., 732 East 142d St., New York.—Brushes.
Zucker & Levett & Loeb Co., 526 West 25th St., New York.—Dynamos.

ELECTRICAL APPARATUS.

1 **ACCUMULATORS.**—See 28, Batteries, Storage.

2 **ADJUSTERS, CORD.** See 111, Cord Adjusters.

3 **ALARMS, BURGLAR.**—See 61, Burglar Alarm Systems.

4 **Fire, Manual.**—See 291, Signal Systems, Fire Alarm.

5 **Fire, Thermostatic.**—See 292, Fire Alarms, Thermostatic.

6 **Police.**—See 293, Signal Systems, Police.

7 **ALTERNATORS.**—See 126, Dynamos, Alternating Current.

8 **AMMETERS.**—See 226, Measuring Instruments.

9 **ANNUNCIATOR AND TELEPHONE DROPS.**—See 309, Switch boards, Telephone.

10 **ANNUNCIATORS.** A group of annunciator drops so arranged as to indicate places or locations where circuits have been closed.

Ansonia Electrical Co., Ansonia, Conn.
Boston Electric Co., 29 Harrison Ave. Extension, Boston, Mass.
Chattanooga Armature Works, Chattanooga, Tenn.
Cleveland Armature Works, Hamilton & Coe Sts., Cleveland, O.
Edwards & Co., 405-409 E. 144th St., New York.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Elliott Bros., 970 Hamilton St., Cleveland, O.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
Farr Telephone and Construction Supply Co., 118 W. Jackson Boulevard, Chicago, Ill.
Fisher Electric Works, Detroit, Mich.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Garl Electric Co., Akron, O.
Gifford & Henry, 15 So. 3d St., Philadelphia, Pa.
Heath Electric Co., 336 Grand River Ave., Detroit, Mich.
Herzog Teleseme Co., 51 West 24th St., New York.
Holmes, Booth & Haydens Co., Waterbury, Conn.
Holtzer-Cabot Electric Co., Brookline, Mass.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Jones, J., & Son, 64 Cortlandt St., New York.
Modern Electric Co., Burlington, Ia.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
National Electric Co., Milwaukee, Wis.
National Electrical Mfg. Co., Milford, Conn.
Ohio Electric Works, Cleveland, O.

ANNUNCIATORS, continued.

Ostrander, W. R., & Co., 22 Dey St., New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pearce, Frederick, 18 Rose St., New York.
Stanley & Patterson Inc., 93 Liberty St., New York.
Star Electric Co., Binghamton, N. Y.
Teleseme Electric Mfg. Co., 51 W. 24th St., New York.
Tri City Electric Co., Davenport, Ia.
Viaduct Mfg. Co., Baltimore, Md.
Walsh, Owen, 19 Roosevelt St., New York.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Wilcox, L. M., Newark, N. J.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Wotton Electric and Mfg. Co., Atlanta, Ga.

11 **ANNUNCIATOR WIRE.**—See 355, Wire, Insulated, Annunciator.

12 **ARC LAMPS.**—See 205, Lamps, Arc.

13 **ARMATURES, DYNAMO AND MOTOR.** The revolving generating unit of dynamo-electrical machines, consisting of a series of insulated windings upon a magnetizable core.

Akron Electrical Mfg. Co., Akron, Ohio.
American Engine Co., Bound Brook, N. J.
Ball Electric Co., 404 W. 27th St., New York.
Benton, Thos. P. & Son, 200 So. Front St., La Crosse, Wis.
Bullock Electric Mfg. Co., Cincinnati, O.
Crocker-Wheeler Co., Ampere, N. J.
Cushman Electric Co., 253 Broadway, New York.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Emerson Electric Mfg. Co., St. Louis, Mo.
General Electric Co., Schenectady, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Kurz & Root, Appleton, Wis.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
Phoenix Electric Mfg. Co., Mansfield, Ohio.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Three Rivers Electric Co., Three Rivers, Mich.
Triumph Electric Co., 610 Baymiller St., Cincinnati, O.
Van Loan, I. S., Co., 465 Greenwich St., New York.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

14 **ARMATURE CORES.** The cylindrical laminated soft-iron core upon which the armature windings are wound.

Akron Electrical Mfg. Co., Akron, Ohio.
Bunnell, J. H., & Co., 20 Park Place, New York.
Hartford Machine Screw Co., Hartford, Conn.
Holtzer-Cabot Electric Co., Brookline, Mass.
Phoenix Electric Mfg. Co., Mansfield, Ohio.
Sprague Electric Co., 527-531 W. 34th St., New York.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric and Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.

15 **ARMATURE DISCS.** Soft-iron discs for building up the laminated core of an armature.

Bell Electric Motor Co., 197 Wooster St., New York.
Cook, T. W. G., 2-6 Reade St., New York.
Smith, Thos., & Co., Worcester, Mass.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

16 **ARMS, CROSS.**—See 113, Cross Arms.

17 **Mast.**—See 225, Mast Arms.

18 **ARRESTERS, LIGHTNING.**—See 216, Lightning Arresters.

19 **Spark.**—See 302, Spark Arresters.

20 **ATTACHMENT PLUGS.**—See 247, Plugs, Attachment.

21 **BASES, INCANDESCENT LAMP.** The projecting base of an incandescent lamp, specially arranged to permit easy mechanical attachment to socket and cause concurrent connection of the leading-in wires to the supply conductors.

Benjamin Electric Mfg. Co., 141 S. Clinton St., Chicago, Ill.
Bliss-Chester Co., Providence, R. I.
Bogert & Hopper, 162 William St., New York.
Bridgeport Brass Co., Bridgeport, Conn.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
General Electric Co., Schenectady, N. Y.
New Jersey Lamp and Bronze Works, New Brunswick, N. J.
Providence Gas Burner Co., 25 Blount St., Providence, R. I.
Scoville Mfg. Co., Waterbury, Conn.
Steele & Johnson Mfg. Co., Waterbury, Conn.

22 **Trolley.** Swiveling spring-actuated bases for trolley poles on trolley cars for holding the collecting wheel firmly against the trolley wire.

Dayton Mfg. Co., Dayton, O.
Detroit Trolley & Mfg. Co., Ltd., Detroit, Mich.
Homer Commutator Co., Mason near Wilson Aves, Cleveland, O.
Nuttall, R. D., Co., Pittsburg, Pa.
Stanley Electric Mfg. Co., Pittsfield, Mass.
United States Electric Railway Supply Co., Detroit, Mich.
Wolfe Bros. & Dillingham, Denver, Colo.

23 **BATTERIES, CLOSED CIRCUIT.** Voltaic cells capable of working constantly on closed circuits without serious polarization.

Bunnell, J. H., & Co., 20 Park Place, New York.
Edison Mfg. Co., 83 Chambers St., New York.
Electrical Appliance Co., 132-134 Longworth St., Cincinniti, O.
Gordon Battery Co., 439 E. 144th St., New York.
Hussey Dynamo Battery Co., 39 Cortlandt St., New York.
Improved Primary Battery Co., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Novelty Electric Co., 54 N. 4th St., Philadelphia, Pa.
Nungesser Electric Battery Co., 27-33 King St., Cleveland, O.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pearce, Frederick, 18 Rose St., New York.
Pullen, Leon W., Electrical Co., 618 Chestnut St., Philadelphia, Pa. *See adv. page 72.*

BATTERIES, CLOSED CIRCUIT, continued.

Ravenna Carbon Works, Ravenna, O.
Viaduct Mfg. Co., Baltimore, Md.
Waterbury Battery Co., Waterbury, Conn.
White, S. S., Dental Mfg. Co., 1130 Chestnut St., Philadelphia.

24 **Electro-plating.** Voltaic cells of heavy current capacity for electro-deposition purposes.

General Electric Co., Schenectady, N. Y.
Gordon Battery Co., 439 E. 144th St., New York.
Pullen, Leon W., Electrical Co., 618 Chestnut St., Philadelphia, Pa. *See adv. page 72.*

25 **Medical.** Combinations of voltaic cells and an induction coil for electro-therapeutical purposes.

Averill, Frank E., Buffalo, N. Y.
Birtman, C. F., Co., 45 Randolph St., Chicago, Ill.
Bohn, C. C., 729 6th Ave., New York.
Brooklyn Electric Lamp and Novelty Co., 105 Liberty St., Brooklyn, N. Y.
Bunnell, J. H., & Co., 20 Park Place, New York.
Bunnell Telegraphic and Electrical Co., 110 Beekman St., N. Y.
Burnap, Wm. H., 259 W. 27th St., New York.
Burry, John, 654 Hudson St., New York.
Carter Mfg. Co., Louisville, Ky.
Chloride of Silver Dry Cell Battery Co., 409 N. Paca St., Baltimore, Md.
Dodd & Struthers, Des Moines, Iowa.
Dressler, Charles E., & Bros., 17 Lexington Ave., New York.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Electro-Medical Battery Co., Kalamazoo, Mich.
Electro-Medical Mfg. Co., 59th & Wallace Sts., Chicago, Ill.
Electro-Therapeutic Mfg. Co., Indianapolis, Ind.
Flemming, Otto, Philadelphia, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Gordon Battery Co., 439 E. 144th St., New York.
Gugler Electric Mfg. Co., Minneapolis, Minn.
Harvard Electric Co., 226 S. Clinton St., Chicago, Ill.
Hochster, Albert, 60 West 120th St., New York.
Jones, J., & Son, 64 Cortlandt St., New York.
Kendrick & Davis, Lebanon, N. H.
Kidder, Jerome, Mfg. Co., 820 Broadway, N. Y.
Krabbe, Christian, 166 Broadway, Brooklyn, N. Y.
McIntosh Battery and Optical Co., 39 W. Randolph St., Chicago, Ill.
Manufacturers' and Inventors' Electric Co., 84 Nassau St., N.Y.
Meyrowitz, E. B., 104 E. 23d St., New York.
Mianus Electric Co., Mianus, Conn.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
Ohio Electric Works, Cleveland, O.
Ostrander, W. R., & Co., 22 Dey St., New York.
Otto, F. G., & Sons, Jersey City, N. J.
Pearce, Frederick, 18 Rose St., New York.
Pignolet, Louis M., 78 Cortlandt St., New York.
Reynolds Electric Flasher Mfg. Co., 221 5th Ave., Chicago, Ill.
Rich, Charles E., 943 De Kalb Ave., Brooklyn, N. Y.
Richardson, A. M., & Co., 317 West Broadway, New York.
Sence, L., & Son, 112 University Place, New York.
Splitdorf, C. F., 17 Vandewater St., New York.

BATTERIES, MEDICAL, continued.

Swan Electric Mfg. Co., 59 William St., New York.
Tardie, E. J., 221 6th Ave., New York.
Thorp, W. Grant, Newburg, N. Y.
Unique Electric Device Co., 21 Park Row, New York.
United States Battery Co., New Rochelle, New York.
Van Houten & Tenbroeck Co., 300 4th Ave., New York.
Voltamp Electric Mfg. Co., Baltimore, Md.
Wagner. R. V., & Co., 308 Dearborn St., Chicago, Ill.
Waite & Bartlett Mfg. Co., 217 E. 23d St., New York.
Wappler Electric Controller Co., 177 E. 87th St., New York.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Williams, E. Q., 316 E. Water St., Syracuse, N. Y.
Williams, P. G., 6 Barclay St., New York.
World Mfg. Co., 505 Elm St., Cincinnati, O.

26 **Open Circuit, Dry.** Voltaic cells with electrolytes in semi-liquid or paste form which are not capable of remaining on closed circuit without serious polarization.

American Carbon & Battery Co., 2134 De Kalb St., St. Louis.
American Coil Co., West Somerville, Mass.
American Electrical Novelty & Mfg. Co., Hudson & Vandam Sts., New York.
Bunnell, J. H., & Co., 20 Park Place, New York.
Bunnell Telegraphic and Electrical Co., 110 Beekman St., N.Y.
Burnley Battery and Mfg. Co., Painesville, O.
Chloride of Silver Dry Cell Battery Co., 409 N. Paca St., Baltimore, Md.
Eastern Carbon Works, Jersey City, N. J.
Electric Contract Co., 202 Centre St., New York.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Ericsson Telephone Co., 296 Broadway, New York.
Eureka Tempered Copper Works, North East, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Howard Electric Novelty Co., 221 Canal St., New York.
Hubbs-Neer Electrical Mfg. Co., Butler, O.
Hydra Battery Co., 70 Reade St., New York.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Jones, J., & Son, 64 Cortlandt St., New York.
Kidder, Jerome Mfg. Co., 820 Broadway, New York.
La Salle Electric Co., 47 W. Lake St., Chicago, Ill.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturing & Selling Co., 131 Crosby St., New York.
Miamisburg Electric Co., Miamisburg, O.
National Carbon Co., W. Madison and Highland Aves., Cleveland, O.
Non-Polarizing Dry Battery Co., 209 Sullivan St., New York.
Nungesser Electric Battery Co., 27-33 King St., Cleveland, O.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
P. & W. Electric Co., Newburgh, N. Y.
Phenix Electrical Works, 203 Washington St., Brooklyn, N. Y.
Prentiss Clock Improvement Co., 49 Dey St., New York.
Roche, William, 42 Vesey St., New York.
Sandusky Supply & Construction Co., 513-575 Market St., Sandusky, Ohio.
Solar Carbon Works. Ravenna, O.
Standard Carbon Co., Cleveland, O.

BATTERIES, OPEN CIRCUIT, LIQUID, continued.

Sterling Electric Co., Lafayette, Ind.
Thornton, G. C., 62 Reade St., New York.
Vallee Bros., Electric Co., 625 Arch St., Philadelphia, Pa.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Voltamp Electric Mfg. Co., Baltimore, Md.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.

27 **Open Circuit, Liquid.** Voltaic cells, with electrolytes in solution, which are not capable of remaining on closed circuit without serious polarization.

American Carbon & Battery Co., 2134 De Kalb St., St. Louis.
Ansonia Electrical Co., Ansonia, Conn.
Badt, F. B., & Co., 1504 Monadnock Block, Chicago, Ill.
Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bunnell, J. H., & Co., 20 Park Place, New York.
Eastern Carbon Works, Jersey City, N. J.
Electric Gas Lighting Co., 195 Devonshire St., Boston, Mass.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Farr Telephone and Construction Supply Co., 118 W. Jackson Boulevard, Chicago, Ill.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Goltz Engineering Co., 127 Fulton St., Chicago, Ill.
Gordon Battery Co., 439 E. 144th St., New York.
Harrison Bros., & Co., 35th St., cor. Gray's Ferry Road, Philadelphia, Pa.
Hirlimann, C. J., 17 Laight St., New York.
Holtzer-Cabot Electric Co., Brookline, Mass.
Hydra Battery Co., 70 Reade St., New York.
Lasalle Electric Co., 47 W. Lake St., Chicago, Ill.
Leclanché Battery Co., 117 E. 131st St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Miamisburg Electric Co., Miamisburg, O.
Minneapolis Electric and Construction Co., Minneapolis, Minn.
National Carbon Co., W. Madison and Highland Aves., Cleveland, O.
National Electrical Mfg. Co., Milford, Conn.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Peru Electric Mfg. Co., Peru, Ind.
Pullen, Leon W., Electrical Co., 618 Chestnut St., Philadelphia, Pa. *See adv. page 72.*
Ravenna Carbon Works, Ravenna, O.
R. I. Telephone & Electric Co., 24 Calender St., Providence, R. I.
Sterling Electric Co., Lafayette, Ind.
Swan Electric Mfg. Co., 59 William St., New York.
Van Houten & Tenbroeck Co., 300 4th Ave., New York.
Waterbury Battery Co., Waterbury, Conn.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.

28 **Storage.** Secondary cells, usually having lead electrodes of similar nature, used for the accumulating and storage of energy of electric currents by virtue of chemical work done upon the electrodes.

American Battery Co., 174 S. Clinton St., Chicago, Ill.
American Motor Carriage Co., 514 E. Prospect St., Cleveland, O.

BATTERIES, STORAGE, continued.

Brooklyn Electric Lamp & Novelty Co., 278 Fulton St., Brooklyn, N. Y.
Buffalo Battery Co., Buffalo, N. Y.
Chicago Storage Battery Co., 1406 Fisher Bldg., Chicago, Ill.
Clark, A. F., & Co., 2130 W. Susquehanna Ave., Philda, Pa.
Columbus Storage Battery Co., Columbus, O.
Dayton Electrical Mfg. Co., Dayton, O.
Dayton Mfg. Co., Dayton, O.
Dayton Storage Battery Co., Dayton, O.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Electric Storage Battery Co., 19th St. and Allegheny Ave., Philadelphia, Pa.
Electric Sup. and Battery Co., 1424 Woodland Ave., Cleveland.
Empire Storage Battery & Mfg. Co., 13 E. 39th St., New York.
Euker, Geo. W., Co., Richmond, Va.
General Storage Battery Co., Chicago, Ill.
Goltz Engineering Co., 127 Fulton St., Chicago, Ill.
Gould Storage Battery Co., 25 West 33d St., New York.
Hartford Accumulator Co., Hartford, Conn.
Hatch Accumulator Co., 201 State St., Boston, Mass.
Hauss, D. J., 426 Pike Building, Cincinnati, O.
Helios-Upton Co., Peabody, Mass.
Jewell Storage Battery Co., Pittsfield, Mass.
MacRae, Hector, Baltimore, Md.
Mueller, H. C., 200 Hanover St., Milwaukee, Wis.
Muhle, H. M. N., Dayton, O.
National Battery Co., Buffalo, N. Y.
North American Electric Storage Co., Philadelphia, Pa.
Northwestern Storage Battery Co., 465-467 W. 22d St., Chicago, Ill.
Oxide Battery Co., 1627 N. 10th St., Philadelphia, Pa.
Phenix Electrical Works, 203 Washington St., Brooklyn, N. Y.
Porter Battery Co., Waukeegan, Ill.
Pullen, Leon W., Electrical Co., 618 Chestnut St., Philadelphia, Pa. *See adv. page 72.*
Ruprecht Electrical Co., 769 Cedar Ave., Cleveland, O.
Smith Storage Battery Co., 5 Frederick St., Binghamton, N. Y.
Scott Automobile Co., St. Louis, Mo.
Storage Battery Supply Co., 239 E. 27th St., New York.
Thornton Electric Works, 3 E. 14th St., New York.
Thresher Electric Co., Dayton, O.
Union Storage Battery Co., Cleveland, O.
United States Battery Co., New Rochelle, N. Y.
Vail Storage Battery Co., 199 Chambers St., New York.
Vesta Accumulator Co., 226 State St., Chicago, Ill.
Western Storage Battery Co., Indianapolis, Ind.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Willard Storage Battery Co., 49 Wood St., Cleveland, O.
Witherbee Igniter Co., 25 W. 33d St., New York.

29 **BATTERY CARBONS.**—See 76, Carbons, Battery.

30 **BATTERY COPPERS.**—See 110, Coppers, Battery.

31 **BATTERY GAGES.**—See 158, Gages, Battery.

32 **BATTERY JARS.**—See 197, Jars, Battery.

33 **BATTERY POROUS CUPS.**—See 257, Porous Cups.

34 **BATTERY ZINCS.**—See 362, Zincs, Battery.

35 **BELLS, ELECTRIC.** Bells operated by electro-magnets having automatic contact-breakers in their circuits.

Ansonia Electrical Co., Ansonia, Conn.
Boston Electric Co., 29 Harrison Avé. Extension, Boston, Mass.
Bunnell, J. H., & Co., 20 Park Place, New York.
Edwards & Co., 405-409 E. 144th St., New York.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Holtzer-Cabot Electric Co., Brookline, Mass.
Keil, Francis, & Son, 671 E. 163d St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
Ostrander, W. R., & Co., 22 Dey St., New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pearce, Frederick, 18 Rose St., New York.
Spies Electric Co., 87 W. Van Buren St., Chicago, Ill.
Sterling Electric Co., Lafayette, Ind.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.

36 **Electro-mechanical.**—See 164, Gongs, Electro-mechanical.

37 **Magneto.**—See 222, Magneto Bells and Ringers.

38 **BINDING POSTS.**—See 103, Connections and Terminals, Wire.

39 **BLASTING APPARATUS, ELECTRIC.** Apparatus for electrically igniting charges of powder or dynamite in blasting.

Electric Exploder Co., 120 Liberty St., New York.
Macbeth, Jas., & Co., 128 Maiden Lane, New York.
Smith, H. Julius, Electric Fuse Co., Pompton Lake, N. J.

40 **BLOCKS, FUSE.**—See 117, Cut-outs, Incandescent.

41 **BOARDS, TABLET OR PANEL.**—See 242, Panel Boards.

42 **BONDS, RAIL.**—See 263, Rail Bonds.

43 **BOOSTERS.**—See 229, Motor-Generators.

44 **BOOTHS, SOUND PROOF, TELEPHONE.** For insuring privacy to speakers at telephones.

Bissell, F., Co., 226-230 Huron St., Toledo, O.
Carter-Mann Lumber Co., Mansfield, O.
Huey, M. S., Co., Indianapolis, Ind.
Mason Telephone Pay Station Co., Ludington, Mich.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Sterling Electric Co., Lafayette, Ind.
Vought-Berger Co., La Crosse, Wis.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Yesbera Mfg. Co., Toledo, O.

44A **BORING MACHINES.** For electric wiring.

G. & E. Electric & Construction Co., Binghamton, N. Y.
McCrea, James, & Co., 67 W. Washington St., Chicago, Ill.

45 **BOXES, JUNCTION AND OUTLET.**—See 198, Junction and Outlet Boxes.

46 **Service, Electric.**—See 101, Conduits, Interior.

47 **Starting.**—See 281, Rheostats, Adjustable Motor-starting.

47A **Switch, Open and Concealed, and Marine.** Receptacles for enclosing switches in concealed interior wiring; also watertight, for marine installation.

Dart Mfg. Co., Hartford, Conn.
Garrett, Miller & Co., N. E. Cor. 4th & Orange Sts., Wilmington, Del.
Hart & Hegeman Mfg. Co., 22 Union Pl., Hartford, Conn.
Martin Electric Co., 32 Vesey St., New York.
Renim Specialty Co., 176 Federal St., Boston, Mass.

48 **Telephone.** Suitably shaped boxes with backboards for containing complete telephone equipments.

American Hardwood Mfg. Co., Grottoes, Va.
Ayres, J. W., 792 W. Madison St., Chicago, Ill.
Heyden, F. L., 306 S. Clinton St., Chicago, Ill.
Huey, M. S., Co., Indianapolis, Ind.
Jordan, Edw. B., 129 Degraw St., Brooklyn, N. Y.
Livers & Co., Grottoes, Va.
Massachusetts Mfg. & Electrical Supply Co., Chelsea, Mass.
Noblett, E. J., Co., 898 W. 35th St., Chicago, Ill.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Sumter Telephone Mfg. Co., Sumter, S. C.
Vought-Berger Co., La Crosse, Wis.
Wabash Cabinet Co., Wabash, Ind.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.

49 **BRACKETS, FIXTURE.**—See 144, Fixtures, Electric and Combination.

50 **BRACKETS AND PINS, INSULATOR.** Pole and cross-arm supports for line wire insulators.

Anderson, Albert and J. M., Mfg. Co., 289 A St., Boston, Mass.
Batesville Insulator, Pin and Bracket Wks., Batesville, Miss.
Blue Ridge Locust Pin Co., Asheville, N. C.
Boggs, J. S., Troy, N. C.
Central Mfg. Co., Chattanooga, Tenn.
Cohn & Rocke, Princess Ann, Md.
Eccleston Lumber Co., 29 Broadway, New York. *See adv. page 73.*
Gilliland Pin & Bracket Co., Adrian, Mich.
Gough & Davis, Burnsville, W. Va.
Heinemann, George & Co., 737 Girard Ave., Philadelphia, Pa.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Kapp & Miller Co., Rural Hall, N. C.
Knowles, C. S., 7 Arch St., Boston, Mass.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.

BRACKETS AND PINS, INSULATOR, continued.

Lundin Electric & Machine Co., Boston, Mass.
Pettingell & Andrews Co., Atlantic Ave. & Pearl St., Boston, Mass.
Pennsylvania Pin and Bracket Co., Pittsburg, Pa.
Pierce, C. L., Jr., Chicago, Ill.
Standard Arm and Pin Co., Laurel, Miss.
Standard Pole and Tie Co., 44 Broad St., New York. *See adv. page 71.*
Texas Arm and Pin Co., Beaumont, Tex.
Towers Pin and Bracket Co., Ellijay, Ga.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

51 **BRAIDING MACHINES.**—See 187, Insulating Machines.

52 **BRANCH BLOCKS.**—See 117, Cut-Outs, Incandescent.

53 **BRIDGING BELLS.**—See 222, Bells, Magneto.

54 **BRUSHES.** Conducting strips or plates that bear on commutators of direct current dynamo-electric machinery.

55 **Carbon.**

American Carbon Co., Noblesville, Ind.
Becker Bros., 39 to 43 Washington St., Chicago, Ill.
Crouse-Tremaine Carbon Co., Fostoria, O.
Dickey-Sutton Carbon Co., Lancaster, O.
Eastern Carbon Works, Jersey City, N. J.
Faraday Carbon Co., Jeannette, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Galvanic Metal Paper Co., Jersey City, N. J.
Hart & Co., 804 Monadnock Blk., Chicago, Ill.
Le Valley Vitae Carbon Brush Co., 119-125 E. 42nd St., N. Y.
National Carbon Co., W. Madison & Highland Ave., Cleveland, O.
Partridge Carbon Co., Sandusky, O.
Ravenna Carbon Co., Ravenna, O.
Solar Carbon Works, Ravenna, O.
Speer Carbon Co., St. Marys, Pa.
Thompson Electric Works, 350 Dearborn St., Chicago, Ill.
United States Carbon Co., Cleveland, O.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

56 **Graphite.**

Becker Bros., 39-43 W. Washington St., Chicago, Ill.
Dixon, Joseph, Crucible Co., Jersey City, N. J.
Eastern Carbon Works, Jersey City, N. J.
Gilmore Electric Co., 625 First St., Boston, Mass.
Holmes Fibre-Graphite Mfg. Co., Philadelphia, Pa.
Mayer & Englund Co., 1020-1024 Filbert St., Philadelphia, Pa.
Speer Carbon Co., St. Mary's, Pa.

57 **Sheet Metal.**

Becker Bros., 39 W. Washington St., Chicago, Ill.
Bogue, Chas. J., 213 Centre St., New York.

BRUSHES, SHEET METAL, continued.

Eureka Commutator Brush Co., Milwaukee, Wis.
Eureka Tempered Copper Works, North East, Pa.
Galvanic Metal Paper Co., Jersey City, N. J.
Gilmore Electric Co., 625 First St., Boston, Mass.
Hobart Electric Mfg. Co., Troy, O.
K. & W. Co., Pittsfield, Mass.
Miamisburg Electric Co., Miamisburg, O.
Ohio Electric Specialty Mfg. Co., 8 W. Main St., Troy, O.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philadelphia, Pa.
Phoenix Electric Mfg. Co., Mansfield, O.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Wirt Electric Co., 4523 Tacony Rd., Philadelphia, Pa.
Zogg, N., 732 E. 142d St., New York.

58 **Woven Wire.**

American Woven Wire Brush Co., Salem, Mass.
Averill, Frank E., Buffalo, N. Y.
Barkelew Electric Mfg. Co., Middletown, O.
Becker Bros., 39 to 43 Washington St., Chicago, Ill.
Crown Woven Wire Brush Co., Salem, Mass.
Elevator Supply and Repair Co., 34 W. Monroe St., Chicago.
Eureka Tempered Copper Works, North East, Pa.
Fleming, W. H., Co., Salem, Mass.
Gilmore Electric Co., 625 First St., Boston, Mass.
Hobart Electric Mfg. Co., Troy, O.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Kester Electric Mfg. Co., 250 S. Jefferson St., Chicago, Ill.
Lindsey, H. E., Electrical Supply Co., 917 Market St., St. Louis, Mo.
Moore, Alfred F., 200 N. 3d St., Philadelphia, Pa.
Mullinix Electric Co., Norwood, O.
Ohio Electric Specialty Mfg. Co., 8 W. Main St., Troy, O.
Peerless Electric Co., 141 S. Clinton St., Chicago, Ill.
Perfection Supply Co., 621 Broadway, New York.
Phoenix Electric Mfg. Co., Mansfield, O.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
United States Electrical Contracting Co., Syracuse, N. Y.

59 **BRUSH HOLDERS.** Devices for supporting the collecting brushes of dynamo-electric machines.

Akron Electrical Mfg. Co., Akron, O.
Baylis Co., 140 Washington St., New York.
Becker Bros., 39 W. Washington St., Chicago, Ill.
California Electric Works, San Francisco, Cal.
Eureka Commutator Brush Co., Milwaukee, Wis.
Eureka Tempered Copper Works, North East, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Holtzer-Cabot Electric Co., Brookline, Mass.
Martin Electric Co., 32 Vesey St., New York.
Perfection Supply Co., 621 Broadway, New York.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philda, Pa.

BRUSH HOLDERS, continued.

S. E. I. Co., Hall & McChesney Building, Syracuse, N. Y.
Supply Mfg. Co., Pittsburg, Pa.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.

60 **BULB CLEANERS.**—See 275, Replacers and Cleaners, Incandescent Lamp.

61 **BURGLAR ALARM SYSTEMS.** Electric signal systems for automatically announcing interferences with doors or windows, or entrances into buildings.

American Car & Ship Hardware Mfg. Co., New Castle, Pa.
Ansonia Electrical Co., Ansonia, Conn.
Bernz, Otto, Newark, N. J.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bunnell J. H., & Co., 20 Park Place, New York.
Cole & Son, Rockford, Ill.
Edwards & Co., 405-409 E. 144th St., New York.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Excelsior Burglar Alarm Co., Cleveland, O.
Farr Telephone & Construction Supply Co., 118 W. Jackson Blvd., Chicago, Ill.
Garl Electric Co., Akron, O.
Heath Electric Co., 336 Grand River Ave., Detroit, Mich.
Herzog Teleseme Co., 51 W. 24th St., New York.
Holmes Electric Protective Co., 26 Cortlandt St., New York.
Holtzer-Cabot Electric Co., Brookline, Mass.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Marvel Patents Co., 189 Montague St., Brooklyn, N. Y.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
Modern Electric Co., Burlington, Iowa.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
National Electrical Mfg. Co., Milford, Conn.
Ostrander, W. R., & Co., 22 Dey St., New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.
Slack, E. T., Sandusky, O.
Star Electric Co., Binghamton, N. Y.
Telephone Burglar and Fire Alarm Co., Rochester, N. Y.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Wilcox, L. M., Newark, N. J.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Yurgae Signalphone Mfg. Co., Milwaukee, Wis.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

62 **BURNERS, ELECTRIC GAS-LIGHTING.**—See 157, Gas-Lighting Apparatus.

63 **BUSHINGS, INSULATING.**—See 342, Tubes, Wiring; see also 101, Conduits, Interior.

64 **BUTTONS, PUSH.**—See 261, Push Buttons.

65 **BUZZERS.**—See 35, Bells, Electric.

66 **CABLE HANGERS.**—See 172, Hangers, Cable.

67 **CABLE TERMINALS.** Moisture proof coverings for terminals of multi-conductor cables to protect the cable insulation.

American Electric Telephone Co., 38 W. Jackson Blvd., Chicago, Ill.

American Electrical Works, Providence, R. I.
Bissell, F., Co., 226-230 Huron St., Toledo, O.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
Harvard Electric Co., 226 S. Clinton St., Chicago, Ill.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
Mountain State Electrical Co., 55 12th St., Wheeling, W. Va.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Ohio Brass Co., Mansfield, O.
Okonite Co., Ltd., 253 Broadway, New York.
Sterling Electric Co., Lafayette, Ind.
Vought-Berger Co., La Crosse, Wis.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.

68 **CABLES.** Groups of insulated wires contained within one sheathing or protective covering.

69 **Aerial, Telephone.**

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Ferrin, F. M., 45 Arch St., Boston, Mass.
Simplex Electrical Co., 110 State St., Boston, Mass.

70 **Interior and Auto-Thermo.**

American Electrical Works, Providence, R. I.
Montauk Multiphase Cable Co., New York.
Okonite Co., Ltd., 253 Broadway, New York.

71 **Lead Encased.** For conduits.

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Bishop Gutta Percha Co., 420 E. 25th St., New York.
Brixey, W. R., 203 Broadway, New York.
Chicago Insulated Wire Co., Marine Bldg., Chicago, Ill.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Ferrin, F. M., 45 Arch St., Boston, Mass.
General Electric Co., Schenectady, N. Y.
Hazard Mfg. Co., Wilkes Barre, Pa.
India Rubber & Gutta Percha Insulating Co., 15 Cortlandt St., New York.
Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
National Conduit & Cable Co., 41 Park Row, New York.
National India Rubber Co., Bristol, R. I.
New York Insulated Wire Co., 114 Liberty St., New York.
Okonite Co., Ltd., 253 Broadway, New York.
Roebling's, John A., Sons Co., Trenton, N. J.
Safety Insulated Wire & Cable Co., 118 Liberty St., New York.
Simplex Electrical Co., 110 State St., Boston, Mass.

CABLES, LEAD ENCASED, continued.

Standard Underground Cable Co., Pittsburg, Pa.
Waclark Wire Co., 49 Wall St., New York.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

72 **Submarine.**

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Bishop Gutta Percha Co., 420 E. 25th St., New York.
Brixey, W. R., 203 Broadway, New York.
Hazard Mfg. Co., Wilkesbarre, Pa.
India Rubber and Gutta Percha Insulating Co., 15 Cortlandt St., New York.
Indiana Rubber and Insulated Wire Co., Jonesboro, Ind.
National Conduit & Cable Co., 41 Park Row, New York.
National India Rubber Co., Bristol, R. I.
Okonite Co., Ltd., 253 Broadway, New York.
Roebling's, John A., Sons Co., Trenton, N. J.
Safety Insulated Wire & Cable Co., 118 Liberty St., New York.
Simplex Electrical Co., 110 State St., Boston, Mass.
Standard Underground Cable Co., Pittsburg, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

73 **CABLE TESTING APPARATUS.**—See 333, Testing Instruments.

74 **CALL BOXES, DISTRICT TELEGRAPH.**—See 121, District Telegraph Apparatus.

75 **CARBONS, ARC LIGHT.** Prepared carbon rods for use in arc lamps as electrodes.

American Carbon Co., Noblesville, Ind.
Chicago Edison Co., 139 Adams St., Chicago, Ill.
Consumers Carbon Co., Lancaster, O.
Crouse-Tremaine Carbon Co., Fostoria, O.
Dickey-Sutton Carbon Co., Lancaster, O.
Eastern Carbon Works, Jersey City, N. J.
Faraday Carbon Co., Jeannette, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
National Carbon Co., W. Madison & Highland Aves., Cleveland.
Ravenna Carbon Co., Ravenna, O.
Reisinger, Hugo, 11 Broadway, New York.
Solar Carbon Works, Ravenna, O.
Speer Carbon Co., St. Mary's, Pa.
Standard Carbon Co., Cleveland, O.
United States Carbon Co., Cleveland, O.
Washington Carbon Co., Pittsburg, Pa.

76 **Battery.** For use as negative, or anode elements of open circuit batteries.

American Carbon Co., Noblesville, Ind.
American Carbon & Battery Co., 2134 De Kalb St., St. Louis.
Eastern Carbon Works, Jersey City, N. J.
Dickey-Sutton Carbon Co., Lancaster, O.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
National Carbon Co., W. Madison and Highland Aves., Cleveland, O.

CARBONS, BATTERY, continued.

Peru Electric Mfg. Co., Peru, Ind.
Pittsburg Electrical and Machine Works, Pittsburg, Pa.
Ravenna Carbon Co., Ravenna, O.
Solar Carbon Works, Ravenna, O.
Standard Carbon Co., Cleveland, O.
United States Carbon Co., Cleveland, O.
Washington Carbon Co., 64 Conestoga Building, Pittsburg, Pa.

77 **CARBON PLATES, DIAPHRAGMS, BALLS, POINTS, ETC.** Special shapes for use in batteries, telephone transmitters, etc.

Eastern Carbon Works, Jersey City, N. J.

78 **CAR HEATERS, ELECTRIC.**—See 174, Heating and Cooking Apparatus, Electric.

79 **CAR LIGHTING APPARATUS, ELECTRIC.** For independently furnishing electric current to railway cars while in service.

Gould Coupler Co., 25 West 33d St., New York.
White, J. H., Manufacturing Co., 127 N. 10th St., Brooklyn, N. Y.

80 **CELLS, BATTERY.**—See 197, Jars, Battery.

81 **CHANDELIERS, ELECTRIC.**—See 144, Fixtures, Electric and Combination.

82 **CIRCUIT BREAKERS.** Devices for automatically opening electric circuits in case of rise of current above predetermined values.

Atkinson, J. M., Co., 2427 Calumet Ave., Chicago, Ill.
Condit, S. B., Jr., & Co., 63 Oliver St., Boston, Mass.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Cutter Electrical & Mfg. Co., 1728 Spring Garden St., Philda, Pa.
Fisher Electrical Works, Detroit, Mich.
Fort Wayne Electric Works, Fort Wayne, Ind.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
General Equipment Co., Camden, N. J.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Hartman Circuit Breaker Co., Mansfie'd, O.
La Roche, F. A., Co., 652 Hudson St., New York.
McCarthy Bros., & Ford, Buffalo, N. Y.
Ward, Leonard, Electric Co., Bronxville, N. Y.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

83 **CLAMPS, BATTERY.** For use in making connections at battery electrodes.

Bunnell, J. H., & Co., 20 Park Place, New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philda, Pa.
Pearce, Frederick, 18 Rose St., New York.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

84 **Wire Splicing.**—See 106, Construction Tools, Lineman's.

85 **CLEANERS, INCANDESCENT LAMP.**—See 275, Replacers and Cleaners, Incandescent Lamp.

86 **CLEATS, CAR WIRING.**—Specially adapted to accommodate the wiring arrangements used in trolley cars.

Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Burns, Jas. F., 811 Fairmount Ave., Philadelphia, Pa.
General Electric Co., Schenectady, N. Y.

87 **Porcelain or Clay.** For fastening and supporting wires upon celling or walls.

Akron Insulator & Marble Co., Akron, O.
Akron Smoking Pipe Co., Mogadore, O.
American Marble & Toy Mfg. Co., Akron, O.
Bowers Mfg. Co., Mogadore, O.
Brian Pottery Co., Trenton, N. J.
Brunt, G. F., Porcelain Works, East Liverpool, O.
Canton Insulator and Clay Co., Canton, O.
Clayton & Co., Trenton, N. J.
Columbia Insulator Co., Akron, O.
Diamond Porcelain Co., Trenton, N. J.
Electric Porcelain and Mfg. Co., Trenton, N. J.
Electric Porcelain Co., East Liverpool, O.
Empire China Works, 144 Greene St., Brooklyn, N. Y.
Farr Telephone and Construction Supply Co., 118 W. Jackson Boulevard, Chicago, Ill.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Hartford Faience Co., Hartford, Conn.
Hudson Porcelain Co., Trenton, N. J.
Imperial Porcelain Works, Trenton, N. J.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Knowles, C. S., 7 Arch St., Boston, Mass.
Lever, C. H., Mfg. Co., Longwood, Ill.
Martin Electric Co., 32 Vesey St., New York.
Mogadore Insulator Co., Mogadore, O.
New England Elec. Mfg. Co., West Somerville, Mass.
Pass & Seymour, Inc., Solvay, N. Y.
Peru Electric Mfg. Co., Peru, Ind.
Scheidel, W., & Co., 171 Randolph St., Chicago, Ill.
Standard China Works, Trenton, N. J.
Star Porcelain Co., Trenton, N. J.
Thomas, R., & Sons Co., East Liverpool, O.
Trenton Porcelain Co., Mead St., Trenton, N. J.
Union Electrical Porcelain Works, Trenton, N. J.
Viaduct Mfg. Co., Baltimore, Md.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

88 **CLIMBERS.**—See 106, Construction Tools, Lineman's.

89 **CLOCKS, ELECTRIC AND PROGRAMME.**—See 336, Time Systems, Electric.

90 **CLOCK SWITCHES.** Circuit switches arranged to be opened or closed at predetermined times by clock mechanism.

Abbott, Eugene B., 576 Central Ave., Cleveland, O.
Acme Switch Co., 438 Asylum St., Hartford, Conn.
A. & W. Electric Sign Co., Garfield Bldg., Cleveland, O.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Baird Mfg. Co., 24 Michigan St., Chicago, Ill.

CLOCK SWITCHES, continued.

Bissell, F., Co., 226-230 Huron St., Toledo, O.
Banner Electric Co., Bane and Walnut Sts., Youngstown, O.
College City Electric Co., Galesburg, Ill.
Condit, S. B. Jr., & Co., 63 Oliver St., Boston, Mass.
Edwards & Co., 405-409 E. 144th St., New York.
Electric Motor and Equipment Co., Newark, N. J.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
La Roche, F. A., Co., 652 Hudson St., New York.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
Prentiss Clock Improvement Co., 49 Dey St., New York.
Whitney Electrical Instrument Co., 203 Broadway, New York.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

91 **CLOCKS, WATCHMAN'S.**—See 344, Watchman's Time Detector Systems.

92 **CLUTCHES, ARC LAMP.** Automatic clamping mechanism used in arc lamps for feeding the carbons.

Fort Wayne Electric Works, Fort Wayne, Ind.
Lundin Electric & Machine Co., Boston, Mass.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.
Peterson, John L., & Co., Galesburg, Ill.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philda, Pa.
Turner Brass Works, Franklin and Michigan Sts., Chicago.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.

93 **COILS, INDUCTION.**—See 182, Induction Coils.

94 **Resistance.**—See 277, Resistance Coils.

95 **Spark.**—See 303, Spark Coils.

96 **COME-ALONGS.**—See 106, Construction Tools, Lineman's.

97 **COMMUTATOR BARS.** Wedge shaped segments of copper used in the construction of commutators.

Ansonia Brass & Copper Co., 99 John St., New York.
Ansonia Electrical Co., Ansonia, Conn.
Billings & Spencer Co., Hartford, Conn.
Bridgeport Brass Co., Bridgeport, Conn.
Cameron, H. P., Electrical Mfg. Co., Ansonia, Conn.
Columbia Machine Works, Atlantic Ave. & Chestnut St., Brooklyn, N. Y.
Commutator Co., Minneapolis, Minn.
Eureka Tempered Copper Works, North East, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Forest City Electric Co., Cleveland, O.
Homer Commutator Co., Mason near Wilson Aves., Cleveland.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Jefferson Brass Foundry, 209 King St., Brooklyn, N. Y.
Lawrence & Abel, Buffalo, N. Y.
Mansfield Tempered Copper Co., Mansfield, O
Miamisburg Electric Co., Miamisburg, O.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
Milwaukee Commutator Co., Milwaukee, Wis.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philda, Pa.

COMMUTATOR BARS, continued.

Sterion Copper, Brass & Bronze Co., 63 N. Ashland Ave., Chicago, Ill.
Van Dorn-Elliott Electric Co., Cleveland, O.
Van Wagoner & Williams Hardware Co., Cleveland, O.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.
Williams, E. A., & Son, 105 Plymouth St., Jersey City, N. J.

98 **COMMUTATORS.** Current carrying devices used on the armatures of direct-current dynamo-electrical machines for the rectification of the alternating currents generated.

Bell Electric Motor Co., 197 Wooster St., New York.
Ball Electric Co., 404 W. 27th St., New York.
Becker Bros., 39 W. Washington St., Chicago, Ill.
Chattanooga Armature Works, Chattanooga, Tenn.
Cleveland Armture Works, Cleveland, O.
Cushman Electric Co., 253 Broadway, New York.
Eureka Tempered Copper Works, North East, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Fort Wayne Electric Works, Fort Wayne, Ind.
Guarantee Electric Co., Chicago, Ill.
Holtzer-Cabot Electric Co., Brookline, Mass.
Homer Commutator Co., Mason, nr Wilson Ave., Cleveland, O.
Illinois Electric Mfg. Co., Peoria, Ill.
Kester Electric Mfg. Co., 250 S. Jefferson St., Chicago, Ill.
Kurz & Root, Appleton, Wis.
Martin Electric Co., 32 Vesey St., New York.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philda, Pa.
Phoenix Electric Mfg. Co., Mansfield, O.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Tower-Binford Electric & Mfg. Co., 721 E. Main St., Richmond, Va.
Triumph Electric Co., 610 Baymiller St., Cincinnati, O.
Utica Electrical Mfg. & Supply Co., Utica, N. Y.
Van Dorn-Elliott Electric Co., Cleveland, O.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building. Pittsburg, Pa.
York Electric & Mach. Co., York, Pa.

99 **COMMUTATOR TURNING TOOLS.** Modified lathe carriage devices for turning off and truing up surfaces of commutators.

Akron Electrical Mfg. Co., Akron, O.
Crocker-Wheeler Co., Ampere, N. J.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.

100 **CONDENSERS, ELECTRIC.** Conducting plates of great area, placed adjacent, but insulated from each other, effecting large electrical capacities, and permitting flow of high frequency alternating current by induction.

Bunnell, J. H., & Co., 20 Park Place, New York.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Electric Railway Equipment Co., 431 E. Front St., Cincinnati.
Foote, Pierson & Co., 82 Fulton St., New York.

CONDENSERS, ELECTRIC, continued.

General Electric Co., Schenectady, N. Y.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Marshall, Wm., 709 Lexington Ave., New York.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sterling Electric Co., Lafayette, Ind.
Warner Electric Co., Muncie, Ind.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Willyoung & Gibson Co., 40 W. 13th St., New York.
Wotton Electric & Mfg. Co., Atlanta, Ga.

101 **CONDUITS, INTERIOR.** Special tubes for reception and protection of electric wires in interior wiring.

Alphaduct Mfg. Co., 522 W. 22d St., New York.
American Conduit Mfg. Co., New Kensington, Pa.
American Circular Loom Co., Chelsea, Mass.
Boston Electroduct Co., Chelsea, Mass.
Clifton Manufacturing Co., 220 Devonshire St., Boston, Mass.
Condit, S. B. Jr., & Co., 63 Oliver St., Boston, Mass.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Krantz, H., Manufacturing Co., 160-166 7th St., Brooklyn, N. Y.
Osburn Flexible Conduit Co., 21 Park Row, New York.
Rittenhouse-Miller Co., Witherspoon Bldg., Philadelphia, Pa.
Safety-Armorite Conduit Co., Frick Bldg., Pittsburg, Pa.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Sprague Electric Co., 527 W. 34th St., New York.
Vulcanized Rubber Co., 110 Grand St., New York.
White, J. H., Manufacturing Co., 27 N. 10th St., Brooklyn, N. Y.

102 **Underground.** Special earthen ware or other impervious tubes or channels for reception and easy removal of underground cables.

American Conduit Co., Arcade Bldg., Philadelphia, Pa.
American Stone Conduit Co., 94 La Salle St., Chicago, Ill.
American Vitrified Conduit Co., Broadway-Maiden Lane Building, New York.
Camp, H. B., Co., 170 Broadway, New York.
Creosoting Works, Long Island City, New York.
Electrolysisproof Conduit Mfg. Co., Chicago, Ill.
Eppinger & Russell Co., 66 Broad St., New York.
Evens & Howard Fire Brick Co., St. Louis, Mo.
Fibre Conduit Co., Orangeburg, N. Y.
General Electric Co., Schenectady, N. Y.
Kelly, O. S., Springfield, O.
McRoy Clay Works, Brazil, Ind.
Michigan Pipe Co., Bay City, Mich.
National Conduit and Cable Co., 41 Park Row, New York.
Pittsburg Sewer Pipe & Conduit Co., Pittsburg, Kans.
Potomac Terra Cotta Co., Washington, D. C.
Scranton Fire Brick & Conduit Co., Scranton, Pa.
Sprague Electric Co., 527 W. 34th St., New York.
Standard Vitrified Conduit Co., 39 Cortlandt St., New York.

CONDUITS, UNDERGROUND, continued.

Wyckoff Pipe & Creosoting Co., Inc., Stamford, Conn.
Walworth & Neville Mfg. Co., Old Colony Bldg., Chicago, Ill.
Williamsport Wooden Pipe Co., Williamsport, Pa.

103 **CONNECTIONS AND TERMINALS, WIRE.** For connecting wires, cables, etc., to instruments, switchboards, etc.

Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.
American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
American Electrical Works, Providence, R. I.
Ansonia Electrical Co., Ansonia, Conn.
Atkinson, J. M., Co., 2427 Calumet Ave., Chicago, Ill.
Bridgeport Brass Co., Bridgeport, Conn.
Bunnell, J. H., & Co., 20 Park Place, New York.
Bunnell Telegraphic & Electrical Co., 110 Beekman St., New York.
Burt & Tobey, New Bedford, Mass.
Chicago Die & Electric Co., 87 W. Lake St., Chicago, Ill.
Davis Electric Mfg. Co., Springfield, Mass.
Emerson Electric Mfg. Co., St. Louis, Mo.
Empire Wire Co., 92 William St., New York. *See adv. page 72.*
Foote, Pierson & Co., 82 Fulton St., New York.
Harvard Electric Co., 226 So. Clinton St., Chicago, Ill.
Holtzer-Cabot Electric Co., Brookline, Mass.
International Telephone Mfg. Co., Harrison and Clinton Sts., Chicago, Ill.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Lundin Electric & Machine Co., Boston, Mass.
McEvoy, C. H., Lowell, Mass.
McIntire, C., Co., Newark, N. J.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Ohio Brass Co., Mansfield, O.
Ostrander, W. R., & Co., 22 Dey St., New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.
Pearce, Frederick, 18 Rose St., New York.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philda, Pa.
Scheidel, W., & Co., 181 Randolph St., Chicago, Ill.
Springfield Electric Mfg. Co., Springfield, Mass.
Trumbull Electric Co., Plainville, Conn.
Turner Brass Works, Franklin & Michigan Sts., Chicago, Ill.
Vulcanized Rubber Co., 110 Grand St., New York.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.
White, J. H., Mfg. Co., 127 N. 10th St., Brooklyn, N. Y.
Zimdars & Hunt, 52 Grove St., New York.

104 **CONNECTORS, TRAILER.** Special attachment plugs and receptacles for delivering current from electric to trailers.

Central Union Brass Co., St. Louis, Mo.
Garton, W. R., Co., 118-132 W. Jackson Bldg., Chicago, Ill.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
Ohio Brass Co., Mansfield, O.
Sterling Electric Co., Lafayette, Ind.

CONNECTORS, continued.

105 **Trolley-Wire Splicing.** Special connecting sleeves for joining ends of trolley wires with smooth joint.

Eureka Tempered Copper Works, North East, Pa.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
John, H. W., Manville Co., 100 William St., New York.
Kisinger-Ison Co., Cincinnati, O.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
Ohio Brass Co., Mansfield, O.

106 **CONSTRUCTION TOOLS, LINEMEN'S.** Special tools used by linemen, such as splicing clamps, climbers, wire stretchers, pole-erecting tools, etc.

American Steel & Wire Co., The Rookery, Chicago, Ill.
Anderson, W. H., Sons, Inc., 21 St., Aubin Ave., Detroit, Mich.
Billings & Spencer Co., Hartford, Conn.
Burr Mfg. Co., Cleveland, O.
Cincinnati Tool Co., Cincinnati, O.
Cope, T. J., Philadelphia, Pa.
Dicke Tool Co., Downers Grove, Ill.
Donnelly, John, Branford, Conn.
Eureka Fence Co., Richmond, Ind.
Eureka Tempered Copper Works, North East, Pa.
Ferdinand, L. W.,& Co., Boston, Mass.
Fort Wayne Electric Works, Fort Wayne, Ind.
Galewski, A., 90 Chambers St., New York.
Klein, Mathias & Son, 87 West Van Buren St.. Chicago, Ill.
Locke Insulator Mfg. Co., Victor, N. Y.
Lowentraut, P., Newark, N. J.
Nagle, G. W., Electric Co., 520 Adams St., Toledo, O.
Norton Tool Co., West Park, Ohio.
Ohio Brass Co., Mansfield, O.
Oshkosh Logging Tool Co., Oshkosh, Wis.
Patterson Bros., 27 Park Row, New York.
Roberts, George, Pittsburg, Pa.
Smith & Hemenway Co., 296 Broadway, New York.
Stephens, Wilmot, Binghamton, N. Y.
Stromburg-Carlson Telephone Mfg. Co.. 80 Jackson Blvd., Chicago, Ill.
Utica Drop Forge & Tool Co., Utica, N. Y.
Viaduct Mfg. Co., Baltimore, Md.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Whalen, J. B., Co., Sycamore, Ill.

107 **CONTROLLERS, STREET CAR, CRANE, AUTOMOBILE, ETC.** Switching and connecting devices controlling current in electric motors for varying speeds.

Ajax Motor Vehicle Co., 220 W. 36th St., New York.
Automatic Switch Co., 131 Liberty St., New York.
Bullock Electric Mfg. Co., Cincinnati, O.
Crocker-Wheeler Co., Ampere, N. J.
Cutler-Hammer Mfg. Co., 12th St. and St. Paul Ave., Milwaukee, Wis.
Dallett, Thos. H., & Co., York St. & Sedgley Ave., Philadelphia.
Electric Controller & Supply Co., Cleveland, O.
Elwell-Parker Electric Co., 1076 Hamilton St., Cleveland, O.
General Electric Co., Schenectady, N. Y.
Globe Electric Controller Co., Amsterdam, N. Y.
Holtzer-Cabot Electric Co., Brookline, Mass.

CONTROLLERS, continued.

Homer Commutator Co., Cleveland, O.
Ironclad Resistance Co., Westfield, N. J.
Keystone Electric Co., Erie, Pa.
Lamb & Co., Kent & Lyons Sts., Grand Rapids, Mich.
Lowell Model Co., Lowell, Mass.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago.
Morgan Engineering Co., Alliance, O.
National Electric Co., Milwaukee, Wis.
Ohio Electric Specialty Mfg. Co., 8 W. Main St., Troy, O.
Phoenix Electric Mfg. Co., Mansfield, Ohio.
Portland Co., Inc., Portland, Me.
Schaefer Bros., 12 Julius St., Chicago, Ill.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Sprague Electric Co., 527 W. 34th St., New York.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Three Rivers Electric Co., Three Rivers, Mich.
Triumph Electric Co., 610 Baymiller St., Cincinnati, O.
Ward, Leonard, Electric Co., Bronxville, N. Y.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

108 CONVERTERS.—See 338, Transformers.

109 COOKING APPARATUS, ELECTRIC.—See 174, Heating and Cooking Apparatus, Electric.

110 COPPERS, BATTERY. Copper plates for use as anodes in certain closed circuit voltaic cells.

Ansonia Electrical Co., Ansonia, Conn.
Beattie Zinc Works Co., Reading, Mass.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bryant Mfg. Co., 125 Indiana St., Chicago, Ill.
Bryant Zinc Co., 71 W. Adams St., Chicago, Ill.
Coe Brass Mfg. Co., Ansonia, Conn.
Edes Mfg. Co., Plymouth, Mass.
Eureka Tempered Copper Works, North East, Pa.
Fox, J. M., & Co., Portland, Me.
Jones, J., & Son, 64 Cortlandt St., New York.
Lovell, F. H., & Co., 92 William St., New York.
McDermid Mfg. Co., 118 West Jackson Blvd., Chicago, Ill.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.
Pearce, Frederick, 18 Rose St., New York.
Roebling's, John A. Sons, Co., Trenton, N. J.
Star Electric Co., Binghamton, N. Y.
Vallee Bros. Electric Co., 625 Arch St., Philadelphia, Pa.

111 CORD ADJUSTERS. For altering lengths of cords in pendant lights.

American Hard Rubber Co., 9 Mercer St., New York.
American Vulcanized Fibre Co., 1017 Market St., Wilmington, Del.
Bogert & Hopper, 162 William St., New York.

CORD ADJUSTERS, continued.

Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Crescent Co., 134 Van Buren St., Chicago, Ill.
Delaware Hard Fibre Co., Wilmington, Del.
Genevieve Co., Iowa City, Iowa.
Gleason, E. P., 20 West Houston St., New York.
Goodyear Hard Rubber Co., 11 Broadway, New York.
Incandescent Lamp Adjuster Co., Abingdon, Ill.
Lever, C. H., Mfg. Co., Longwood, Ill.
McCreary Electric Co., 136 Liberty St., New York.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Novelty Turning Co., Fitchburg, Mass.
Pacific Electric Co., La Crosse, Wis.
Schuetz, Chas., Newark, N. J.
Smith, Theodore, 151 Throop St., Chicago, Ill.
Stewart, Frank H., & Co., 35 No. 7th St., Philadelphia, Pa. *See adv. page 72.*
Vulcanized Rubber Co., 110 Grand St., New York.
Webster, George, Christiana, Pa.

112 **CORD, FLEXIBLE INSULATED LAMP.** Double conductor flexible wire, consisting of two separate insulated stranded wires twisted together.

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Ansonia Electrical Co., Ansonia, Conn.
Bishop Gutta Percha Co., 420 E. 25th St., New York.
Ferrin, F. M., 45 Arch St., Boston, Mass.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Hazard Mfg. Co., Wilkesbarre, Pa.
Holmes, Booth & Haydens Co., Waterbury, Conn.
Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
McEvoy, C. H., Lowell, Mass.
Magnet Wire Co., 141 Broadway, New York.
Montauk Fire Detecting Wire Co., 100 Broadway, New York.
Moore, Alfred F., 200 N. 3d St., Philadelphia, Pa.
National India Rubber Co., Bristol, R. I.
Okonite Co., Ltd., 253 Broadway, New York.
Phillips Insulated Wire Co., Pawtucket, R. I.
Roebling's, John A., Sons Co., Trenton, N. J.
Safety Insulated Wire & Cable Co., 118 Liberty St., New York.
Simplex Electrical Co., 110 State St., Boston, Mass.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Standard Underground Cable Co., Pittsburg, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

113 **CROSS ARMS.** Horizontal cross-beams used on poles for support of insulator pins.

Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Bailey Mfg. Co., Elkin, N. C.
Boggs, J. S., Troy, N. C.
Butler, Geo. R. Co., Sandusky, Ohio.
Central Mfg. Co., Chattanooga, Tenn.
Cohn & Rock, Princess Anne, Md.
Eccleston Lumber Co., 29 Broadway, New York. *See adv. page 73.*
Heinemann, George, & Co., 737 Girard Ave., Philadelphia, Pa.

CROSS ARMS, continued.

Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johns, H. W., Manville Co., 100 William St., New York.
K. & B. Company, Philadelphia, Pa.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Standard Arm & Pin Co., Laurel, Miss.
Standard Pole and Tie Co., 44 Broad St., New York. *See adv. page 71.*
Sterling, W. C., & Son, Monroe, Mich.
Texas Arm & Pin Co., Beaumont, Tex.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.
White, J. H., Mfg. Co., 127 N. 10th St., Brooklyn, N. Y.
Wyckoff Pipe & Creosoting Co., Inc., Stamford, Conn.

114 **CROSS CONNECTING BOARDS.**—See 309, Switchboards, Telephone.

115 **CUT-OUTS, ARC LIGHT.** Automatic and hand switches for throwing arc lights out of circuit.

Abbott, Eugene B., 576 Central Ave., Cleveland, O.
Auto Electric Shunt Co., West New Brighton, N. Y.
Ball Electric Co., 404 W. 27th St., New York.
Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Brady, Thos. H., 351 Main St., New Britain, Conn.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Chase-Shawmut Co., Newburyport, Mass.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Pass & Seymour, Inc., Solvay, N. Y.
Perkins Electrical Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Pettingell-Andrews Co., Atlantic Av. and Pearl St., Boston. Mass.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philadelphia, Pa.
Safety Electric Switch Co., 144 Pine St., Providence, R. I.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

116 **Battery.** For controlling current from primary batteries.

Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Electric Supply Co., 105 Warren St., Syracuse, N. Y.
Holtzer-Cabot Electric Co., Brookline, Mass.
La Roche, F. A., Co., 652 Hudson St., New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.
White, O. C., Co., Worcester, Mass.

117 **Incandescent.** Fusible wire or strip connected in incandescent circuits for protection thereto in case of current overload.

CUT-OUTS, continued.

Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.
American Electrical Supply Co., 40 S. Howard St., Baltimore, Md.
Auto Electric Shunt Co., West New Brighton, N. Y.
Banner Electric Co., Bane and Walnut Sts., Youngstown, O.
Brady, Thos. H., 351 Main St., New Britain, Conn.
Brodie Electric Co., Manchester, N. H.
Crescent Electrical Mfg. Co., Rochester, N. Y.
Crouse-Hinds Electrical Co., 308 W. Jefferson St., Syracuse, N. Y.
Cutter Electrical & Mfg. Co., 1728 Spring Garden St., Philda.
Denison, L. S., Co., Youngstown, O.
Fagan, J. C., Watertown, N. Y.
France, A. W., Tacony, Philadelphia, Pa.
Freeman, E. H., Rochester, N. Y.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Harvard Electric Co., 226 So. Clinton St., Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johns, H. W., Manville Co., 100 William St., New York.
Johnson & Morton, Utica. N. Y.
Knowles, C. S., 7 Arch St., Boston, Mass.
Kuhlman Electric Co., Elkhart, Ind.
McKenna Bros., Brass Co., Pittsburg, Pa.
Mallary, W. H., New Castle, Pa.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia Pa.
Rochester Electrical Mfg. Co., 76 Exchange St., Rochester, N. Y.
Rusby, J. S., Nutley, N. J.
Sprague Electric Co., 527 W. 34th St., New York.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Trumbull Electric Co., Plainville, Conn.
Vindex Electric Co., Spring St., Viaduct, Aurora, Ill.
Wagner Electrical Mfg. Co., 2017 Locust St., St. Louis, Mo.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
York Electric & Mach. Co, York, Pa.
Yost Electrical Mfg. Co., Toledo, O.

118 **CUT-OUTS AND PLUGS, TELEGRAPHIC.**—See 324, Telegraph Instruments.

119 **DESK LIGHTS.**—See 214, Lights, Desk.

120 **DIMMERS, THEATRE.**—See 282, Rheostats, Adjustable Theatre Dimming.

121 **DISTRICT TELEGRAPH APPARATUS.** Apparatus for transmitting messenger calls, including call boxes, registers, back-contact relays, answer-back keys, etc.

Bunnell, J. H., & Co., 20 Park Place, New York.
Central Electric Mfg. Co., Tacoma, Wash.
DuBois & Son, 61 Ann St., New York.
Herzog Teleseme Co., 51 West 24th St., New York.
National Electrical Mfg. Co., Milford, Conn.
Omnigraph Mfg. Co., 39 Cortlandt St., New York.

DISTRICT TELEGRAPH APPARATUS, continued.

Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pearce, Frederick, 18 Rose St., New York.
Teleseme Electric Mfg. Co., 51 W. 24th St., New York.
Viaduct Electric Co., Baltimore, Md.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

122 **DOOR OPENERS, ELECTRIC.** Electro-magnetic apparatus for unlocking or opening doors from a distance.

Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Edwards & Co., 405-409 E. 144th St., New York.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Keil, Francis, & Son, 671 East 163d St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
Palmer, Roscoe A., Roxbury District, Boston, Mass.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.
Western Electric Co., 227 So. Clinton St., Chicago, Ill.

123 **DRY BATTERIES.** See 26, Batteries, Open Circuit, Dry.

124 **DYNAMOMETERS, ELECTRIC.**—See 333, Testing Instruments.

125 **DYNAMOS.** Machines for conversion of mechanical energy into electrical energy by means of magneto-electric induction.

126 **Alternating Current.** For production of alternating currents directly without commutation.

Bullock Electric Mfg. Co., Cincinnati, O.
Co-operative Electric Mfg. Co., Corry, Pa.
Elbridge Electrical Mfg. Co., Elbridge, N. Y.
Electric Machinery Co., Minneapolis, Minn.
Emerson Electric Mfg. Co., St. Louis, Mo.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Holtzer-Cabot Electric Co., Brookline, Mass.
La Roche, F. A., Co., 652 Hudson St., New York.
Lincoln Electric Co., 71-73 Ontario St., Cleveland, Ohio.
National Electric Co., Milwaukee, Wis.
National Stamping Works, Michigan St. & La Salle Ave., Chicago, Ill.
Parsell & Weed, 129 W. 31st Stt., New York.
Portland Co., Inc., Portland, Me.
Royal Electric Co., Peoria, Ill.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Warren Electric Mfg. Co., Sandusky, O.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

127 **Direct Current, Arc Lighting.** For production of rectified direct current for use with series constant-current arc lighting systems.

Ball Electric Co., 404 W. 27th St., New York.
Fort Wayne Electric Works, Fort Wayne, Ind.

DYNAMOS, DIRECT CURRENT, continued.

General Electric Co., Schenectady, N. Y.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

128 **Direct Current, Incandescent Lighting and Power.** Producing rectified direct current for multiple distribution in incandescent lighting, street railway and power systems.

Aaron Electric Co., 141 S. Clinton St., Chicago, Ill.
Akron Electrical Mfg. Co., Akron, O.
American Coil Co., West Somerville, Mass.
American Engine Co., Bound Brook, N. J.
Armitage-Herschell Co., No. Tonawanda, N. Y.
Ball Electric Co., 404 W. 27th St., New York.
Barriett Electric Co., 327 E. 6th St., Cincinnati, O.
Bartz, Evans & Wygant, Hornellsville, N. Y.
Bell Electric Motor Co., 115 Bleecker St., New York.
Benton, Thos. P. & Son, 200 So. Front St., La Crosse, Wis.
Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.
Browning Mfg. Co., Milwaukee, Wis.
Brunswick Mfg. Co., Brunswick, Me.
Buckley Electric & Mfg. Co., Kalamazoo, Mich.
Bullock Electric Mfg. Co., Cincinnati, O.
C. & C. Electric Co., 143 Liberty St., New York.
Central Electric & Foundry Co., Lewisburg, Pa.
Clark, James, Jr., & Co., Louisville, Ky.
Colonial Foundry & Machinery Co., Inc., So. Norwalk, Conn.
Commercial Electric Co., Indianapolis, Ind.
Connecticut Dynamo & Motor Co., 526 W. 25th St., New York.
Co-operative Electric Mfg. Co., Corry, Pa.
Corry Novelty Works, Corry, Pa.
Crescent Iron Works, Springfield, Mo.
Crocker-Wheeler Co., Ampere, N. J.
Cushman Electric Co., 253 Broadway, New York.
D. & D. Electric Mfg. Co., Minneapolis, Minn.
Dallett, Thos. H., & Co., York St. and Sedgley Ave., Philadelphia, Pa.
Dayton Electrical Mfg. Co., Dayton, O.
Diehl Mfg. Co., Elizabethport, N. J.
Eager Electric Co., Watertown, N. Y.
Eagle Electric Works, Peoria, Ill.
Eck Dynamo & Motor Works, Main & Mill Sts., Belleville, N. J.
Elbridge Electrical Mfg. Co., Elbridge, N. Y.
Electric Machinery Co., Minneapolis, Minn.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Elwell-Parker Electric Co., Cleveland, O.
Engberg's Electrical & Mechanical Works, St. Joseph, Mich.
Federal Electric Co., Erie, Pa.
Fisher Electrical Works, Detroit, Mich.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne, Ind.
Freed, Henry F., Harrisburg, Pa.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.

DYNAMOS, DIRECT CURRENT, continued.

Goodman Mfg. Co., 48th & Halsted Sts., Chicago, Ill.
Gorman, John, St. Paul, Minn.
Goudey-McLean Co., 120 Liberty St., New York.
Goughnour Electric Co., Canton, O.
Grand Rapids Electric Co., Grand Rapids, Mich.
Hartley-Rispin Electric Mfg. Co., Elgin, Ill.
Hertner Electric Co., Cleveland, O.
Hobart Electric Mfg. Co., Troy, O.
Holtzer-Cabot Electric Co., Brookline, Mass.
Hudson Electrical Works, Hudson, N. H.
Jantz & Leist Electric Co., 808-810 Elm St., Cincinnati, Ohio.
Jenney Electric Mfg. Co., Indianapolis, Ind.
Kentucky Electrical Co., Owensboro, Ky.
Keystone Electric Co., Erie, Pa.
Kurz & Root, Appleton, Wis.
Lagerquist, Gust., Minneapolis, Minn.
Lamb & Co., Grand Rapids, Mich.
La Roche, F. A., Co., 652 Hudson St., New York.
Lincoln Electric Co., 71-73 Ontario St., Cleveland, Ohio.
M. & O. Company, Milwaukee, Wis.
Martin Electric Co., 32 Vesey St., New York.
Mayer, Maxwell M., Electric Co., 216 Center St., New York.
Mechanical Appliance Co., Milwaukee, Wis.
Menominee Electric Mfg. Co., Menominee, Mich.
Meriam-Abbott Co., Cleveland, O.
Milwaukee Electric Co., Milwaukee, Wis.
Moore-Edenfield Electric Mfg. Co., Augusta, Ga.
Morgan-Gardner Electric Co., 2638 Shields Ave., Chicago, Ill.
Motsinger Device Mfg. Co., Pendleton, Ind.
National Electric Co., Milwaukee, Wis.
National Stamping & Electric Co., Michigan St. & La Salle Ave., Chicago, Ill.
New England Motor Co., Lowell, Mass.
Northern Electrical Mfg. Co., Madison, Wis.
Northwestern Electric Co., St. Paul, Minn.
Parsell & Weed, 129 West 31st Street, New York.
P. & W. Electric Co., Lafayette, Ind.
Peerless Electric Co., 141 S. Clinton St., Chicago, Ill.
Peerless Electric Co., Warren, O.
Phoenix Electric Mfg. Co., Mansfield, Ohio.
Portland Co., Inc., Portland, Me.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philadelphia, Pa.
Reek, John, Electrical Works, Camden, Mich.
Reliance Elec. Co., Milwaukee, Wis.
Richmond Electric Co., Richmond, Va.
Richter Electric Co., Camden, N. J.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Ritter Electric Co., 118 W. 2d St., Cincinnati, O.
Robbins & Myers Co., Springfield, O.
Rochester Electric Motor Co., Rochester, N. Y.
Roth Bros., & Co., 27 S. Clinton St., Chicago, Ill.
Rumsey Electric Co., Detroit, Mich.
Ruprecht Electric Co., Cleveland, O.
S. & H. Electrical Co., Skaneateles, N. Y.
Sheffield Car Co., Three Rivers, Mich.
Sprague Electric Co., 527 W. 34th St., New York.
Stanley Electric Mfg. Co., Pittsfield, Mass.

DYNAMOS, DIRECT CURRENT, continued.

Star Dynamo Works, Jefferson City, Mo.
Sterling Electric Motor Co., Dayton, O.
Stow Mfg. Co., Binghamton, N. Y.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Swett, A. L., Iron Works, Medina, N. Y.
Taylor & Hough, St. Paul, Minn.
Thompson Electric Works, 346 Wabash Ave., Chicago, Ill.
Three Rivers Electric Co., Three Rivers, Mich.
Towle, Geo. C., Mfg. Co., Lancaster, Pa.
Triumph Electric Co., 610 Baymiller St., Cincinnati, O.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Wagner-Hatch Motor Co., 308 Dearborn St., Chicago, Ill.
Warner Electric Co., Muncie, Ind.
Watts Electric Co., 701 Indiana St., Indianpolis, Ind.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

129 **Direct Current, Electro-Plating.** Producing rectified direct current of low voltage and heavy amperage for electro-deposition and electolytic purposes.

Averill, Frank E., Buffalo, N. Y.
Becker Bros., 39-43 W. Washington St., Chicago, Ill.
Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.
Bishop, W. S., Atwater Block, New Haven, Conn.
Bossier Electric Co., 478 Pearl St., New York.
Bullock Electric Mfg. Co., Cincinnati, Ohio.
Commercial Electric Co., Indianapolis, Ind.
Crocker-Wheeler Co., Ampere, N. J.
Dallett, Thos. H., & Co., York St. & Sedgley Ave., Philadelphia, Pa.
Diehl Mfg. Co., Elizabethport, N. J.
Eck Dynamo & Motor Works, Main & Mill Sts., Belleville, N. J.
Electric Novelty Works, Atlanta, Ga.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Gray & Co., 505 Elm St., Cincinnati, Ohio.
Hanson & Van Winkle, Newark, N. J.
Hobart Electric Mfg. Co., Troy, O.
Holtzer-Cabot Electric Co., Brookline, Mass.
Jantz & Leist Electric Co., 808-810 Elm St., Cincinnati, Ohio.
Jenney Electric Mfg. Co., Indianapolis, Ind.
Kurz & Root, Appleton, Wis.
La Roche, F. A. Co., 652 Hudson St., New York.
Lincoln Electric Co., Cleveland, O.
Mayer, Maxwell M., Electric Co., 216 Centre St., New York.
Milwaukee Electric Co., Milwaukee, Wis.
National Electric Co., Milwaukee, Wis.
New England Motor Co., Lowell, Mass.
Phoenix Electric Mfg. Co., Mansfield, Ohio.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philadelphia, Pa.
Reek, John, Electric Works, Camden, Mich.
Richter Electric Co., Camden, N. J.
Rochester Electric Motor Co., Rochester, N. Y.

DYNAMOS, DIRECT CURRENT, continued.

Sprague Electric Co., 527 W. 34th St., New York.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Thresher Electric Co., Dayton, O.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Zucker & Levett & Loeb Co., 526 W. 25th St., New York.

130 ECONOMY COILS.—See 338, Transformers.

131 ELECTROLIERS.—See 144, Fixtures, Electric.

131A ELECTRO-DENTAL APPARATUS.

Chicago Dental Mfg. Co., 90 State St., Chicago, Ill.
Victor Electric Co., 55-61 Market St., Chicago, Ill.

132 ELECTRO-PLATING APPARATUS.—See 129, Dynamos, Electro-Plating.

133 EXCITERS.—See 126, Dynamos, Alternating Current.

134 EXTENSION BELLS.—See 222, Magneto Bells and Ringers.

135 FANS, BATTERY-MOTOR, ELECTRIC. Driven by small motors adapted for closed-circuit battery currents.

Andrews & Johnson Co., 256 Washington Blvd., Chicago, Ill.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Boston Electric Fan & Heating Co., 170 Summer St., Boston.
Diehl Mfg. Co., Elizabethport, N. J.
Edison Mfg. Co., 83 Chambers St., New York.
Electric Novelty Works, Atlanta, Ga.
Fort Wayne Electric Works, Fort Wayne, Ind.
Kendrick & Davis, Lebanon, N. H.
Knapp Electric & Novelty Co., 511 W. 51st St., New York.
Lionel Mfg. Co., 24 Murray St., New York.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Modern Electric Co., Burlington, Iowa.
Ohio Electric Works, Cleveland, O.
Ostrander, W. R., & Co., 22 Dey St., New York.
P. & W. Electric Co., Lafayette, Ind.
Reek, John, Electrical Works, Camden, Mich.
Sterling Electric Motor Co., Dayton, Ohio.
Swope, Henry R., 120 N. 7th St., Philadelphia, Pa.

136 Ceiling, Alternating Current, Electric. Horizontal pendant fans operated by special vertical shaft alternating current motors.

Backus Water Motor Co., Newark, N. J.
Baldwin Engineering Co., 107 W. 17th St., New York.
Boston Electric Fan & Heating Co., 170 Summer St., Boston.
Dayton Fan & Motor Co., 611 E. 3d St., Dayton, O.
Emerson Electric Mfg. Co., St. Louis, Mo.
Hunter Fan & Motor Co., Fulton, N. Y.
Latham, E. B., & Co., 39 Vesey St., New York.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

FANS, continued.

137 **Ceiling, Direct Current, Electric.** Horizontal pendant fans operated by special vertical shaft direct current motors.

Backus Water Motor Co., Newark, N. J.
Bates, D. L., & Bro., Dayton, O.
Boston Electric Fan & Heating Co., 170 Summer St., Boston.
Colonial Electric Co., Ravenna, O.
Dayton Fan & Motor Co., 611 E. 3d St., Dayton, O.
Diehl Mfg. Co., Elizabethport, N. J.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Hunter Fan & Motor Co., Fulton, N. Y.
Manufcturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Pennsylvania Electric Co., Marietta, Pa.
Peerless Electric Co., Warren, O.
Robbins & Myers Co., Springfield, O.
Sprague Electric Co., 527 W. 34th St., New York.
Towle, Geo. C., Mfg. Co., Lancaster, Pa.
Warren Electric & Specialty Co., Warren, O.
Western Electric Co., 159 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

138 **Disc, Direct Motor Connected.** Ventilating or blowing fans direct driven by electric motors.

C. & C. Electric Co., 143 Liberty St., New York.
Commercial Electric Co., Indianapolis, Ind.
Crocker-Wheeler Co., Ampere, N. J.
Diehl Mfg. Co., Elizabethport, N. J.
Elektron Mfg. Co., Springfield, Mass.
Emerson Electric Mfg. Co., St. Louis, Mo.
Fuller Co., Detroit, Mich.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Massachusetts Fan Co., Waltham, Mass.
Mechanicl App'iance Co., Milwaukee, Wis.
New England Motor Co., Lowell, Mass.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philda. delphia, Pa.
Roth Bros., & Co., 27 S. Clinton St., Chicago, Ill.
Sprague Electric Co., 527 W. 34th St., New York.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Three Rivers Electric Co., Three Rivers, Mich.
Wagner Electric Mfg. Co., St. Louis, Mo.
Western Electric Co., 159 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

139 **Portable, Alternating Current, Electric.** Operated by alternating current motors.

Adams, C. F., Trenton, N. J.
Emerson Electric Mfg. Co., St. Louis, Mo.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Peerless Electric Co., Warren, O.
Quaker City Electric Co., 2036-2538 W. Lippincott St., Philadelphia, Pa.
Shedd Electric & Mfg. Co., Roselle, N. J.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

FANS, continued.

140 **Portable, Direct Current, Electric.** Operated by direct current motors.

Adams, C. F., Trenton, N. J.
Bates, D. L., & Bro., Dayton, O.
Boston Electric Fan & Heating Co., 170 Summer St., Boston, Mass.
Colonial Electric Co., Ravenna, O.
Commercial Electric Co., Indianapolis, Ind.
Crocker-Wheeler Co., Ampere, N. J.
Dayton Fan & Motor Co., 611 E. 3d St., Dayton, O.
Diehl Mfg. Co., Elizabethport, N. J.
Fort Wayne Electric Works, Fort Wayne. Ind.
General Electric Co., Schenectady, N. Y.
Jandus Electric Co., 108 Superior St., Cleveland, O.
Jordan Bros., 74 Beekman St., New York.
Menominee Electric Mfg. Co., Menominee, Mich.
Pennsylvania Electric Co., Marietta, Pa.
Peerless Electric Co., Warren, O.
Robbins & Myers Co., Springfield, O.
Roth Bros., & Co., 27 S. Clinton St., Chicago, Ill.
Shedd Electric & Mfg. Co., Roselle, N. J.
Sprague Electric Co., 527 W. 34th St., New York.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Swan Electric & Mfg. Co., 59 William St., New York.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Warren Electric & Specialty Co., Warren, O.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

141 **FIRE ALARM SYSTEMS.** See 291, Signal Systems, Fire Alarm.

142 **FIRE ALARMS, THERMOSTATIC.** See 291, Signal System, Fire Alarm.

143 **FIXTURES AND HOODS, STREET LAMP.** Combined protecting supports and reflectors for arc lamps in street lighting.

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
Almon, G. H., Montpelier, Vt.
American Reflector & Lighting Co., 2018 Van Buren St., Chicago, Ill.
Bernstein Electric Mfg. Co., Gardner & Roxbury Sts., Boston, Mass.
Brady, Thos. H., 351 Main St., New Britain, Conn.
Cornwell, R. M., Co., Syracuse, N. Y.
Corry Novelty Works, Corry, Pa.
Cutter, George, Co., Union and Fulton Sts., Chicago, Ill.
Fletcher Mfg. Co., Dayton, O.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne. Ind.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Gothberg, Bernard, Mfg. Co., 146 Worth St., New York.
Klemm & Co., 132 No. Fifth St., Philadelphia, Pa.
Lundin Electric & Machine Co. 176 Federal St., Boston, Mass.
Martin Electric Co., 32 Vesey St., New York.
Meserve, F. W., So. Framingham, Mass.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.

FIXTURES, STREET LAMP, continued.

Philadelphia Electrical & Mfg. Co., 2011 Market St., Philda, Pa.
Roberts, H. C., Electric Supply Co., 831 Arch St., Philadelphia.
Tea Tray Co., Mulberry and Murray Sts., Newark, N. J.
Van Namee, G. L., Mfg. Co., Gouvernour, N. Y.
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.
White, J. H., Manufacturing Co., 127 N. 10th St., Brooklyn, N.Y.

144 **FIXTURES, ELECTRIC AND COMBINATION.** Chandeliers for incandescent lighting only, or in combination with gas lighting.

Adam, Frank, Elec. Co., 904 Pine St., St. Louis, Mo.
Albert, Isaac, 464 Cherry St., New York.
American Brass & Copper Co., 19 E. 21st St., New York.
American Lamp & Brass Co., Trenton, N. J.
Archer-Pancoast Co., 10th Ave. & 24th St., New York.
Baggat, E., Co., 169 Adams St., Chicago, Ill.
Baldinger & Kupfermann, 433 Broadway, Brooklyn, N. Y.
Belle-Hickey Mfg. Co., St. Louis, Mo.
Benjamin Electric Mfg. Co., 141 S. Clinton St., Chicago, Ill.
Black-Allan Co., St. Paul, Minn.
Blaiser, M. E., & Co., Utica, N. Y.
Braun, D. J., Mfg. Co., 135 W. Washington St., Chicago, Ill.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bradley & Hubbard Mfg. Co., Meriden, Conn.
Bredsvold Mfg. Co., St. Louis, Mo.
Brenner Bros. Mfg. Co., Waterbury, Conn.
Brown, Jas., & Son, Pittsburg, Pa.
Caldwell, E. F., & Co., 48 W. 15th St., New York.
Cassidy & Son, Mfg. Co., 33 W. 23d St., New York.
Central Supply Co., Columbus, O.
Chicago Gas & Electric Fixture Co., 19 S. Jefferson St., Chicago, Ill.
Chicago General Fixture Co., 169 Adams St., Chicago, Ill.
Cleveland Gas & Electric Fixture Co., Cleveland, O.
Dale Co., 9th Ave. & 13th St., New York.
Day, Thos., Co., San Francisco, Cal.
Edwards, W. S., Mfg. Co., 21 Lake St., Chicago, Ill.
Enterprise Gas & Elec. Fixture & Brass Co., St. Louis, Mo.
Faries Mfg. Co., Decatur, Ill.
Farr Telephone & Construction Supply Co., 118 W. Jackson Boulevard, Chicago, Ill.
Fensterer & Ruhe, 47 Murray St., New York.
Finch, J. H., 96 High St., Boston, Mass.
Findlay, Robert, Mfg. Co., 349 Adams St., Brooklyn, N. Y.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Gaites, Peace & Co., 22 Clay St., Brooklyn, N. Y.
Garden City Chandelier Co., 297 Wabash Ave., Chicago, Ill.
Gas Fixture & Brass Co., Sheriff St., Cleveland, O.
Gaumer, John L., Co., N. E. Cor. 19th and Hamilton Sts., Philadelphia, Pa.
Gibson Gas Fixture Works, Philadelphia, Pa.
Gleason, E. P., Mfg. Co., 20 West Houston St., New York.
Goetz, B., Mfg. Co., 251 Third Ave., New York.
Gothberg, Bernard, Mfg. Co., 146 Worth St., New York.
Hollings, R., & Co., 39 Bedford St., Boston, Mass.
Horn & Brannen Mfg. Co., Philadelphia, Pa.

FIXTURES, ELECTRIC, ETC., continued.

Hubbell, Harvey, Bridgeport, Conn.
Iden & Co., 9th St., and University Place, New York.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Koehn, Alfred, Iron & Bronze Works, 157 W. 29th St., N. Y.
Kraushaar Lamp and Reflector Co., St. Louis, Mo.
Lau, Willy H., Pullman Bldg., Chicago, Ill.
Lawrence Gas Fixture Mfg. Co., Philadelphia, Pa.
Luckett, Fred., 30 Boerum Place, Brooklyn, N. Y.
Luetke Art Metal Works, New York.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
McCoy, J. B., & Co., 124 W. 33d St., New York.
McCreary Electric Co., 136 Liberty St., New York.
McKenney & Waterbury, 181 Congress St., Boston, Mass.
McKenney, Charles H., & Co., 634 Washington St., Boston, Mass.
Mattern & Findley Mfg. Co., Pittsburg, Pa.
Mitchell-Vance Co., 24th St. and Tenth Ave., New York.
Moran & Hastings Mfg. Co., 61 E. Washington St., Chicago, Ill.
Morreau Gas Fixture Mfg. Co., Cleveland, O.
Nichols Gas Fixture Co., 56 Boerum St., Brooklyn, N. Y.
O'Neill, M. J., St. Paul, Minn.
Ornamental Fixture Co., Cleveland, O.
Overbaugh & Ayres, Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Oxley & Enos, Mfg. Co., 7th Ave. & 6th St., New York.
Pellegrini, A., & Co., 155 W. 29th St., New York.
Plaut, L., & Co., 432 E. 23d St., New York.
Polacheck, Chas., & Bros. Co., 429 Chestnut St., Milwaukee, Wis.
Reading Gas & Electric Fixture Co., 133 Pearl St., Reading, Pa.
Reineke-Wilson Co., Pittsburg, Pa.
Reliance Mfg. Co., Philadelphia, Pa.
Reserve Fund & Mfg. Co., Cleveland, O.
Roeser & Sommer, 386 Second Ave., New York.
Royle, Charles, 596 Kent Ave., Brooklyn, N. Y.
Sellner Gas & Electric Fixture Mfg. Co., 703-709 Locust St., St. Louis, Mo.
Shapiro & Aronson, 67 Centre St., New York.
Shreve, Crump & Low Mfg. Co., Boston, Mass.
Silver City Iron Works, Meriden, Conn.
St. Louis Brass Mfg. Co., St. Louis, Mo.
Standard Gas Fixture Co., Bound Brook, N. J.
Storsberg, F., 20 Atlantic St., Newark, N. J.
Strutt, Wm., Paterson, N. J.
Terre Haute Gas Fixture Co., Terre Haute, Ind.
Thackara Mfg. Co., Philadelphia, Pa.
Toledo Chandelier Mfg. Co., Toledo, O.
Vosburgh, W. C., Mfg. Co., 269 State St., Brooklyn, N. Y.
Waterbury Mfg. Co., Waterbury, Conn.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Western Gas Fixture Co., Toledo, O.
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.
White, J. H., Manufacturing Co., 27 N. 10th St., Brooklyn, N. Y.
White, O. C., Co., Worcester, Mass.
Williamson, R., & Co., 52 E. Lake St., Chicago, Ill.
Wilmarth, T. W., Co., Chicago, Ill.

145 **FLEXIBLE CORD.**—See 112, Cord, Flexible, Insulated Lamp.

146 **FLOATS, HIGH AND LOW WATER, ELECTRIC.** For giving signals electrically of limit high and low levels of water.

Foote, Pierson, & Co., 82 Fulton St., New York.
Low Water Electric Alarm Co., Detroit, Mich.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philda, Pa.
Prentiss Clock Improvement Co., 49 Dey St., New York.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

147 **FLOOR BUTTONS OR TREADS.** See 261, Push Buttons.

148 **FLUSH SWITCHES.**—See 314, Switches, Flush.

149 **FOOT WARMERS, ELECTRIC.**—See 174, Heating and Cooking Apparatus, Electric.

150 **FORKS, TROLLEY.** Forked bearings for trolley pole contact wheels.

Central Union Brass Co., St. Louis, Mo.
Economic Mfg. Co., Springfield, O.
Edison-Johnson Electrical Mfg. Co., 1135 Broadway, New York.
Electric Railway Equipment Co., Cincinnati, O.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
Graphite Lubricating Co., Bound Brook, N. J.
International Specialty Co., Detroit, Mich.
Nuttall, R. D., Co., Pittsburg, Pa.
Star Brass Works, Kalamazoo, Mich.
Towle, George C., Mfg. Co., Lancaster, Pa.

151 **FRICTIONAL MACHINES.**—See 306, Static Machines.

152 **FUSE BLOCKS.**—See 117, Cut-Outs, Incandescent.

153 **FUSES AND FUSE HOLDERS.** Strips of fusible-alloy metal for connection in circuits to prevent danger from excessive currents, and holders for protecting same from exposure or injury.

American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
Bissell, F., Co., 226 to 230 Huron St., Toledo, O.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Chase-Shawmut Co., Newburyport, Mass.
Chicago Die & Electric Co., 87 W. Lake St., Chicago, Ill.
Chicago Fuse Wire & Mfg. Co., 358 Dearborn St., Chicago, Ill.
Cook, Frank B., Chicago, Ill.
D. & W. Fuse Co., 407 Pine Stt., Providence, R. I.
Foote, Pierson & Co., 82 Fulton St., New York.
General Electric Co., Schenectady, N. Y.
Harvard Electric Co., 226 S. Clinton St., Chicago, Ill.
Horton-Massnick Co., Detroit, Mich.
Indicating Fuse Co., Providence, R. I.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johns, H. W., Manville Co., 100 William St., New York.
Kirk, Arthur, & Son Co., Pittsburg, Pa.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
McIntire, C., Co., Newark, N. J.
Modern Electric Co., Burlington, Iowa.

FUSES AND FUSE HOLDERS, continued.

Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Scott Bros. Elec. Co., Detroit, Mich.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sterling Electric Co., Lafayette, Ind.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

154 **FUSE WIRE AND LINKS.**—See 354, Wire, Fuse.

155 **GALVANOMETERS.**—See 333, Testing Instruments.

156 **GAS ENGINE IGNITERS.**—See 180, Igniters, Gas Engine.

157 **GAS LIGHTING APPARATUS.** For the electrical ignition of gas jets.

Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Cleverly Electrical Works, 1018 Chestnut St., Philadelphia, Pa.
Drake Acetylene Apparatus Co., Cleveland, O.
Edwards & Co., 405-409 E. 144th St., New York.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Holtzer-Cabot Electric Co., Brookline, Mass.
Parke, John Y., & Co., 724 Cherry St., Philadelphia, Pa.
Partrick, Carter & Wilkens, 1231 Callowhill Stt., Philda, Pa.
Vallee Bros. Electrical Co., 625 Arch St., Philadelphia, Pa.

158 **GAGES, BATTERY.** Portable galvanometers for testing relative strengths of batteries.

Baird Mfg. Co., 24 Michigan St., Chicago, Ill.
Bunnell, J. H., & Co., 20 Park Place, New York.
Bunnell Telegraphic & Electrical Co., 110 Beekman St., New York.
Eldredge Electric Mfg. Co., Springfield, Mass.
Keystone Electrical Instrument Co., 9th St., cor. Montgomery Ave., Philadelphia, Pa.
Standard Electric Time Co., Waterbury, Conn.
Whitney Electrical Instrument Co., 203 Broadway, New York.

159 **GAGES, WIRE.** See 350, Wire Gages.

160 **GENERATORS.**—See 125, Dynamos.

161 **GENERATORS, THERMO-ELECTRIC.** Groups of thermo-pyles for production of electric currents upon absorption of heat energy.

Clark Bros., Glass Mfg. Co., Ellwood City, Pa.
Thermo Electric Co., 41 Park Row, New York.

162 **GLOBES, ARC LIGHT.** For protection of arc or inner globe in arc lamps.

Buckeye Electric Co., Buffalo, N. Y.
Century Glass Co., Bellaire, O.
Columbia Incandescent Lamp Co., St. Louis, Mo.

GLOBES, ARC LIGHT, continued.

Fensterer & Ruhe, 47 Murray St., New York.
Fostoria Bulb & Bottle Co., Fostoria, Ohio.
Fostoria Glass Specialty Co., Fostoria, O.
Fostoria Incandescent Lamp Co., Fostoria, Ohio.
Gill & Co. (Washington Flint Glass Works), York & Thompson Sts., Philadelphia, Pa.
Gillinder & Sons (Franklin Flint Glass Works), 135 Oxford St., Philadelphia, Pa.
Gleason, E. P., Mfg. Co., 20 West Houston St., New York.
Holophane Glass Co., 15 East 32d St., New York.
Libby Glass Co., cor. Ash St. & W. & L. E. R. R., Toledo, O.
Murray, James J., & Co., Trenton, cor. Allegheny Ave., Philadelphia, Pa.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Pairpoint Corporation, New Bedford, Mass.
Phoenix Glass Co., Pittsburg, Pa.
Pittsburg Lamp, Brass & Glass Co., Pittsburg, Pa.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Union Glass Co., Somerville, Mass.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

163 GLOBES, SHADES, ETC. Glass globes, reflectors, etc., of special shapes for use with electric lamps.

American Reflector & Lighting Co., 2018 Van Buren St., Chicago, Ill.
Buckeye Electric Co., Buffalo, N. Y.
Byesville Glass & Lamp Co., Byesville, O.
Clark Bros. Glass Mfg. Co., Elwood City, Pa.
Columbia Incandescent Lamp Co., St. Louis, Mo.
Federal Electric Co., 76 Market St., Chicago, Ill.
Fensterer & Ruhe, 47 Murray St., New York.
Fostoria Bulb & Bottle Co., Fostoria, Ohio.
Fostoria Glass Specialty Co., Fostoria, Ohio.
Fostoria Incandescent Lamp Co., Fostoria, Ohio.
Frink, I. P., 551 Pearl St., New York.
Gill & Co. (Washington Flint Glass Works), York & Thompson Sts., Philadelphia, Pa.
Gleason, E. P., Mfg. Co., 181 Mercer St., New York.
Klemm & Co., 132 N. 5th St., Philadelphia, Pa.
Holoplane Glass Co., 15 E. 32d St., New York.
McCreary Electric Co., 136 Liberty St., New York.
New York & Ohio Co., Warren, O.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Phoenix Glass Co., Pittsburg, Pa.
Pittsburg Lamp, Brass & Glass Co., Pittsburg, Pa.

164 GONGS, ELECTRO-MECHANICAL. Continuous-ringing mechanical alarm bells arranged to be set into operation electrically.

Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bunnell, J. H., & Co., 20 Park Place, New York.
Bunnell Telegraphic & Electrical Co., 110 Beekman St., New York.
Clark Bros. Glass Mfg. Co., Elwood City, Pa.
Edwards & Co., 405-409 E. 144th St., New York.

GONGS, ELECTRO-MECHANICAL, continued.

Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Gamewell Auxiliary Fire Alarm Co., 19 Barclay St., New York.
Marshall, Sanders Co., 301 Congress St., Boston, Mass.
Ostrander, W. R., & Co., 22 Dey St., New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.
Pearce, Frederick, 18 Rose St., New York.
Star Electric Co., Binghamton, N. Y.
Viaduct Mfg. Co., Baltimore, Md.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

165 **Street Car.** Bells actuated by foot pressure for use on street cars.

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
American Tube & Stamping Co., Bridgeport, Conn.
Bevin Bros. & Co., East Hampton, Conn.
Brill, J. G., Co., 62d St. and Woodland Ave., Philadelphia, Pa.
Cheswick Mfg. Co., Cheswick, Pa.
Dayton Mfg. Co., Dayton, O.
Edwards & Co., 405-409 E. 144th St , New York.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
Ohio Brass Co., Mansfield, O.
Pressed Steel Tack Co., Milwaukee, Wis.
Ross-Meehan Foundry Co., Chattanooga, Tenn.
Starr Bros., East Hampton, Conn.
Wall, P., Mfg. Co., Allegheny, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

166 **Unmounted.** Finished gongs for use on electric bells, electro-mechanical gongs, etc.

American Tube & Stamping Co., Bridgeport, Conn.
Bevin Bros. Mfg. Co., East Hampton, Conn.
Bridgeport Brass Co., Bridgeport, Conn.
East Hampton Bell Co., East Hampton, Conn.
Forbes, Jas. A., East Hampton, Conn.
Gong Bell Mfg. Co., East Hampton, Conn.
Hill, N. N., Brass Co., East Hampton, Conn.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
Plume & Atwood Mfg. Co., Waterbury, Conn.
Waterbury Mfg. Co., Waterbury, Conn.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

167 **GRAVITY BATTERIES.**—See 23, Batteries, Closed Circuit.

168 **GROUND-DETECTORS.**—See 226, Measuring Instruments.

169 **GUARDS, WIRE.** See 351, Wire Guards.

170 **Wire, Lamp.** See 203, Lamp Guards.

171 **HANGERS, ARC LAMP.** Combined supporting and circuit connecting devices for arc lamps.

Adams-Bagnall Electric Co., Cleveland, O.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.

HANGERS, ARC LAMP, continued.

Ball Electric Co., 404 W. 27th St., New York.
Brady, Thos. H., 351 Main St., New Britain, Conn.
Chicago Edison Co., 139 Adams St., Chicago, Ill.
Cornwell, R. M., Co., Syracuse, N. Y.
Cutter, Geo., Co., Union and Fulton Sts., Chicago, Ill.
Electric Porcelain & Mfg. Co., Trenton, N. J.
Fletcher Mfg. Co., Dayton, O.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Incandescent Arc Light Co., 529 W. 34th St., New York.
Harvard Electric Co., 226 So. Clinton St., Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johns, H. W., Manville Co., 100 William St., New York.
K. & W. Co., Pittsfield, Mass.
Knowles, C. S., 7 Arch St., Boston, Mass.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
MacAllen, W. T. C., Co., 338 Congress St., Boston, Mass.
Ohio Brass Co., Mansfield, O.
Pass & Seymour, Inc., Solvay, N. Y.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Safety Arc Lamp Hanger & Improvement Co., St. Joseph, Mo.
Safety Electric Switch Co., 144 Pine St., Providence, R. I.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Tea Tray Co., Mulberry & Murray Sts., Newark, N. J.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

172 **Cable.** Supporting hooks or clips used on heavy aerial cables to transfer the weight to supporting wire spans.

Acme Twist Drill Co., Laconia, N. H.
American Twist Drill Co., Laconia, N. H.
Anderson, W. H., Sons, Inc., 21 St. Aubin Ave., Detroit, Mich.
Bissell, F., Co., 226 to 230 Huron St., Toledo, O.
Chase-Shawmut Co., Newburyport, Mass.
Condit, S. B. Jr., & Co., 63 Oliver St., Boston, Mass.
Green Electric Co., Chicago, Ill.
Hubbard & Co., Murtland Bldg., Pittsburg, Pa.
Hurd & Co., 576 W. Broadway, New York.
Johns, H. W., Manville Co., 100 William St., New York.
Macomber & Whyte Rope Co., 21 S. Canal St., Chicago, Ill.
New Haven Noveity Machine Co., New Haven, Conn.
Norton Tool Co., West Park, O.
R. I. Telephone & Electric Co., Providence, R. I.
Standard Underground Cable Co., Pittsburg, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Yonkers Specialty Co., Yonkers, N. Y.

173 **HEAT COILS.**—See 260, Protectors, Telephone Line.

174 **HEATING AND COOKING APPARATUS, ELECTRIC.** For producing and utilizing the heat evolved by electric currents flowing through special resistance conductors.

American Electrical Heater Co., 17 Spencer St., Detroit, Mich.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.

HEATING APPARATUS, continued.

Gold Car Heating Co., Frankfort & Cliff Sts., New York.
Johns, H. W., Manville Co., 100 William St., New York.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
Prometheus Electric Co., 39 Cortlandt St., New York.
Simplex Electric Heating Co., 110 State St., Boston, Mass.
United Elec. Heating Co., 260 Randolph St., Detroit, Mich.
Westinghouse Traction Brake Co., 26 Cortlandt St., New York.

175 **Car, Electric.**

Consolidated Car Heating Co., Albany, N. Y.
Creed Elec. Car Heating Co., Taunton, Mass.
Fowler & Robert Mfg. Co., 1263 Atlantic Ave., Brooklyn, N. Y.
Gold Street Car Heating Co., New York.
Johns, H. W., Manville Co., 100 William St., New York.
Prometheus Electric Co., 39 Cortlandt St., New York.
Simplex Electric Heating Co., 110 State St., Boston, Mass.

176 **HOLDERS, BRUSH.**—See 59, Brush Holders.

177 **Carbon.** Special rod clamps for holding the carbon rod electrodes in arc lamps.

Bogue, Chas. J., 213 Centre St., New York.
Central City Brass Co., Syracuse, N. Y.
Eureka Tempered Copper Works, North East, Pa.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Peterson, John L., & Co., Galesburg, Ill.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philadelphia, Pa.
Seymour, A. P., Syracuse, N. Y.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Towle, Geo. C., Mfg. Co., Lancaster, Pa.
Turner Brass Works, Franklin and Michigan Sts., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

178 **Shade.**—See 289, Shade Holders.

179 **HOODS AND FIXTURES, STREET LAMP.**—See 143, Fixtures and Hoods, Street Lamp.

180 **IGNITERS, GAS ENGINE.** For igniting explosive charges or mixtures of gas in gas engines.

Abbott, Eugene B., 576 Central Ave., Cleveland, O.
American Coil Co., West Somerville, Mass.
Apfel Murdoch Co., 82 Lake St., Chicago, Ill.
Carlisle & Finch Co., 229 E. Clifton Ave., Cincinnati, O.
Crest Mfg. Co., Cambridgeport, Mass.
Dayton Electrical Mfg. Co., Dayton, O.
Dayton Storage Battery Co., Dayton, Ohio.
Dow Portable Electric Co., 218 Tremont St., Boston, Mass.
Elbridge Electrical Mfg. Co., Elbridge, N. Y.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Electric Supply & Battery Co., 1424 Woodland Ave., Cleveland, O.
Euker, George W., Richmond, Va.
Everett Electric & Mfg. Co., Indianapolis, Ind.
Fairfield Motor Co., Bridgeport, Conn.

IGNITERS, GAS ENGINE, continued.

Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Gas Engine Ignition Co., Chicago, Ill.
Hendricks Novelty Co., Indianapolis, Ind.
Holtzer-Cabot Electric Co., Brookline, Mass.
Kendrick & Davis, Lebanon, N. H.
Lancaster, Jas. H., Co., 114 Liberty St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Miller-Knoblock Elec. Mfg. Co., South Bend, Ind.
Modern Electric Co., Burlington, Iowa.
Motsinger Device Mfg. Co., Pendleton, Ind.
Mueller, H. C., 200 Hanover St., Milwaukee, Wis.
Nieman, A. C., & Co., Milwaukee, Wis.
Noxon, C. P. Lee, Syracuse, N. Y.
P. & W. Electric Co., Newburgh, N. Y.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.
Perfection Magneto Co., Anderson, Ind.
Remy Electric Co., Anderson, Ind.
Reek, John, Electrical Works, Camden, Mich.
Roche, Wm., 42 Vesey St., New York.
Rumsey Electric Co., Detroit, Mich.
Runyen, James, & Son, Redkey, Ind.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Splitdorf, C. F., 17 Vandewater St., New York.
Smith, W. A., Grand Rapids, Mich.
Specialty Machine Co., 61 Middle St., Cleveland, O.
Thomas, E. R., Motor Co., Buffalo, N. Y.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Williams, E. Q., 316 E. Water St., Syracuse, N. Y.
York Electric & Mach. Co., York, Pa.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

181 INCANDESCENT LAMPS.—See 209, Lamps, Incandescent.

182 INDUCTION COILS. Arrangements of paralleled coils upon laminated iron cores for induction of currents from one to the other.

American Coil Co., West Somerville, Mass.
American Electric Telephone Co., 38 W. Jackson Boulevard, Chicago, Ill.
American Electrical Works, Providence, R. I.
Ansonia Electrical Co., Ansonia, Conn.
Barrio Vacuum Co., 156 E. 23d St., New York.
Bradley, E. C., & Co., Rochester, N. Y.
Bunnell, J. H., & Co., 20 Park Place, New York.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Dayton Electrical Mfg. Co., Dayton, O.
Edwards & Co., 405-409 E. 144th St., New York.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Electro-Medical Mfg. Co., 59th & Wallace Sts., Chicago, Ill.
Ericsson Telephone Co., 296 Broadway, New York.
Farr Telephone & Construction Supply Co., 118 W. Jackson Boulevard, Chicago, Ill.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.

INDUCTION COILS, continued.

Foote, Pierson & Co., 82 Fulton St., New York.
Harvard Electric Co., 226 So. Clinton St., Chicago, Ill.
Heinze Electric Co., Lowell, Mass.
International Brass & Electric Co., 76 Beekman St., New York.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Jackson, Howard, 79 Franklin St., Boston, Mass.
Jones, J., & Son, 64 Cortlandt St., New York.
Kidder, Jerome, Mfg. Co., 820 Broadway, New York.
Knott, L. E., Apparatus Co., 14 Ashburton Place, Boston.
La Roche, F. A., Co., 652 Hudson St., New York.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
McDermid Mfg. Co., 118 West Jackson Blvd., Chicago, Ill.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago, Ill.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Menominee Electric Mfg. Co., Menominee, Mich.
Miller-Knoblock Elec. Mfg. Co., South Bend, Ind.
Modern Electric Co., Burlington, Iowa.
Monarch Telephone Mfg. Co., 12 S. Clinton St., Chicago, Ill.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Noxon, C. P., Lee, Syracuse, N. Y.
Ohio Electric Works, Cleveland, O.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia, Pa.
Pearce, Frederick, 18 Rose St., New York.
Philadelphia Electric Construction Co., Philadelphia, Pa.
Philadelphia Electric & Mfg. Co., 2011 Market St., Philadelphia, Pa.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Scheidel, W., & Co., Chicago, Ill.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Splitdorf, O. F., 17 Vandewater St., New York.
Sterling Electric Co., Lafayette, Ind.
Swett & Lewis Co., 18 Boyleston St., Boston, Mass.
Varley Duplex Magnet Co., Inc., Providence, R. I.
Van Dorn-Elliott Electric Co., Cleveland, O.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Vought-Berger Co., La Crosse, Wis.
Waite & Bartlett Mfg. Co., 217 E. 23d St., New York.
Western Electric Co., 259 So. Clinton, St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Williams, E. Q., 316 E. Water St., Syracuse, N. Y.
Willyoung & Gibson Co., 40 W. 13th St., New York.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

183 INSTRUMENTS, MEASURING.—See 226, Measuring Instruments.

184 Recording.—See 265, Recording Meters.

185 Testing.—See 333, Testing Instruments.

186 INSULATED WIRE.—See 355, Wire, Insulated.

187 INSULATING MACHINES. Specially adapted weaving and braiding machines for automatically covering bare wire with insulating braid, tape, etc.

Chase Machine Co., Cleveland, O.
Eureka Tempered Copper Works, North East, Pa.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
New England Butt Co., 304 Pearl St., Providence, R. I.
Rhode Island Braiding Machine Co., Providence, R. I.
Textile Machine Works, Inc., Reading, Pa.
Weiss, Otto, Machine Co., New York.

188 INSULATING TAPE.—See 323, Tape, Insulating.

189 INSULATOR PINS.—See 50, Brackets and Pins, Insulator.

190 INSULATORS, GLASS. Insulating supports for wires in telephone, telegraph and transmission lines.

American Coil Co., West Somerville, Mass.
Anderson, A. & J. M., Mfg. Co., 289 A. St., Boston, Mass.
Brookfield Glass Co., 218 Broadway, New York.
Couch & Seeley Co., 26 Binford St., Boston, Mass.
Farr Telephone & Construction Supply Co., 118 W. Jackson Boulevard, Chicago, Ill.
Fensterer & Ruhe, 47 Murray St., New York.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Hemingray Glass Co., Covington, Ky.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johns, H. W., Manville Co., 100 William St., New York.
Knowles, C. S., 7 Arch St., Boston, Mass.
Ohio Brass Co., Mansfield, O.
Scheidel, W., & Co., 18 Randolph St., Chicago, Ill.
Whitney Glass Works, 227 So. Front St., Philadelphia, Pa.
Wormser Glass Co., Pittsburg, Pa.

191 Mineral. For supporting and insulating trolley wires, third rail conductors and other conductors of weight or imposing strain.

American Hard Rubber Co., 9 Mercer St., New York.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Billings & Spencer Co., Hartford, Conn.
Central Union Brass Co., St. Louis, Mo.
Columbia Machine Works, Atlantic Ave. & Chestnut St., Brooklyn, N. Y.
Creaghead Engineering Co., Cincinnati, O.
Electric Railway Equipment Co., 431 E. Front St., Cincinnati, O.
Hutchins, A. E., Detroit, Mich.
Johns, H. W., Manville Co., 100 William St., New York.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
Lovell, F. H., & Co., 92 William St., New York.
MacAllen, W. T. C., Co., Boston, Mass.
Mica Insulator Co., 218 Water St., New York.
Michigan Bolt & Nut Works, Detroit, Mich.
Minerallac Co., 76 Market St., Chicago, Ill.
Ohio Brass Co., Mansfield, O.
Ohio Electric Specialty Mfg. Co., 8 W. Main St., Troy, O.
Piqua Trolley Ear Co., Piqua, O.
Reconstructed Granite Co., 14 Dey St., New York.
Steward, D. M., Mfg. Co., Chattanooga, Tenn.

INSULATORS, continued.

192 **Porcelain and Clay.** Insulating supports for electric light and transmission wires, telephone wires, etc., in outside and interior wiring.

Akron Insulator & Marble Co., Akron, O.
Akron Smoking Pipe Co., Mogadore, O.
American Marble & Toy Mfg. Co., Akron, O.
Bowers Mfg. Co., Mogadore, O.
Brian Pottery Co., Trenton, N. J.
Brunt, G. F., Porcelain Works, East Liverpool, O.
Canton Insulator & Clay Co., Canton, O.
Columbia Insulator Co., Trenton, N. J.
Diamond Porcelain Co., Trenton, N. J.
Electric Porcelain & Mfg. Co., Trenton, N. J.
Electric Porcelain Co., East Liverpool, Ohio.
Empire China Works, 144 Greene St., Brooklyn, N. Y.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Hartford Faience Co., Hartford, Conn.
Henderson Electric Co., 1334 Montana St., Chicago, Ill.
Hudson Porcelain Co., Trenton, N. J.
Imperial Porcelain Works, Trenton, N. J.
Locke Insulator Mfg. Co., Victor, N. Y.
Mogadore Insulator Co., Mogadore, O.
Ohio Brass Co., Mansfield, O.
Pass & Seymour, Inc., Solvay, N. Y.
Peru Electric Mfg. Co., Peru, Ind.
Standard China Works, Trenton, N. J.
Standard Vitrified Conduit Co., 39 Cortlandt St., New York.
Star Porcelain Co., Trenton, N. J.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.
Thomas, R., & Sons Co., East Liverpool, O.
Trenton Porcelain Co., Trenton, N. J.
Union Electrical Porcelain Works, Trenton, N. J.
Union Porcelain Works, 300 Eckford St., Brooklyn, N. Y.
Viaduct Mfg. Co., Baltimore, Md.

193 **Rubber.** Special rubber insulated hooks used upon telegraph and telephone lines in building and house-top wiring.

American Hard Rubber Co., 9 Mercer St., New York.
Loando Hard Rubber Co., Boonton, N. J.
Vulcanized Rubber Co., 110 Grand St., New York.

193A **Third Rail.**

Federal Clay Mfg. Co., 170 Broadway, New York.
Johns, H. W.-Manville Co., 100 William St., New York.
Ohio Brass Co., Mansfield, O.
Standard Vitrified Conduit Co., 39 Cortlandt St., New York.

194 **Tree.** Specially adapted to hold line wires off tree branches and prevent resultant grounding.

Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Brodie Electric Co., Manchester, N. H.
Brookfield Glass Co., 218 Broadway, New York.
Cutter, George, Co., Union & Fulton Sts., Chicago, Ill.
Johns, H. W., Manville Co., 100 William St., New York.
Ohio Brass Co., Mansfield, O.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

195 **INTER-COMMUNICATING TELEPHONES.**—See 329, Telephones, Interior, Inter-Communicating.

196 **IRON ARMORED CONDUITS.**—See 101, Conduits, Interior.

197 **JARS, BATTERY.** Glass or vitreous cells for holding electrodes and electrolytes of batteries.

American Carbon & Battery Co., 2134 De Kalb St., St. Louis.
American Hard Rubber Co., 9 Mercer St., New York.
Appert Glass Co., New York.
Brookfield Glass Co., 218 Broadway, New York.
Canton Glass Works, Marion, Ind.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Cumberland Glass Co., Bridgeton, N. J.
Eastern Carbon Works, Jersey City, N. J.
Edgerton Pottery Co., Edgerton, Wis.
Flint-Lomax Electric & Mfg. Co., Denver Colo.
Gaynor, John, Salem, N. J.
Gilchrist Jar Co., Elmer, N. J.
Gillinder & Sons, 135 Oxford St., Philadelphia, Pa.
Hemingray Glass Co., Covington, Ky.
Huntington Glass Co., Huntington, W. Va.
Illinois Glass Co., St. Louis, Mo.
New England Pottery Co., 146 Condor St., Boston, Mass.
New York Pottery Co., West 36th St., New York.
Pittsburg Glass Co., Pittsburg, Pa.
Salem Glass Works, Salem, N. J.
Stokes Rubber Co., Trenton, N. J.
United States Glass Mfg. Co., Pittsburg, Pa.
Vulcanized Rubber Co., 110 Grand St., New York.
Whitall Tatum Co., 410 Race St., Philadelphia, Pa.
Whitney Glass Works, 227 S. Front St., Philadelphia, Pa.

198 **JUNCTION AND OUTLET BOXES.** For connecting fixture and pendant circuits to mains, or branch circuits to mains in interior wiring.

Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.
Banner Electric Co., Bane & Walnut Sts., Youngstown, O.
Bossert Electric Construction Co., Capital Ave. & York St., Utica, N. Y.
Brady, Thomas H., 351 Main St., New Britain, Conn.
Brodie Electric Co., Manchester, N. H.
Chase-Shawmut Co., Newburyport, Mass.
Cross & Co., Detroit, Mich.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Falk Co., Milwaukee, Wis.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Harvard Electric Co., 223 S. Clinton St., Chicago, Ill.
Johns, H. W., Manville Co., 100 William St., New York.
Johnson & Morton, Utica, N. Y.
Krantz, H., 43 Boerum Place, Brooklyn, N. Y.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
McCarthy Bros. & Ford, Buffalo, N. Y.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Martin Electric Co., 32 Vesey St., New York.

JUNCTION AND OUTLET BOXES, continued.

Mezger, Chas. A., 12 Clinton St., Brooklyn, N. Y.
Ostrander, W. R., & Co., 22 Dey St., New York.
Pringle, W. T., 112 N. 112 N. 12th St., Philadelphia, Pa.
Renim Specialty Co., 176 Federal St., Boston, Mass.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Standard Underground Cable Co., Pittsburg, Pa.
Sterling Electric Co., Lafayette, Ind.
Toler, John, Sons & Co., 108 Adams St., Newark, N. J.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
York Electric & Machine Co., York, Pa.

199 KEYS, TELEGRAPH.—See 324, Telegraph Instruments.

200 KNIFE SWITCHES.—See 316, Switches, Knife.

201 LAMP BASES.—See 21, Bases, Incandescent Lamp.

202 LAMP CORD.—See 112, Cord, Flexible Insulated Lamp.

203 LAMP GUARDS. For protection of portable incandescent lamps.

Amos, Chas. & Co., Detroit, Mich.
Barbee Wire & Iron Works, 44 Dearborn St., Chicago, Ill.
Darby, Edw., & Sons, 235 Arch St., Philadelphia, Pa.
Estey Wire Works Co., 59 Fulton St., New York.
Haist, A., & Co., 73 W. Washington St., Chicago, Ill.
Hamblin & Russell Mfg. Co., Worcester, Mass.
Hipwell Mfg. Co., Allegheny, Pa.
Inglis, Wm., Wire & Iron Works, Detroit, Mich.
Klemm & Co., 132 North 5th St., Philadelphia, Pa.
Knowles, C. S., 7 Arch St., Boston, Mass.
Martin Electric Co., 32 Vesey St., New York.
National Mfg. Co., Worcester, Mass.
Scott Bros. Electric Co., Detroit, Mich.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Wagor, P. R., Mfg. Co., 56 Harrison Ave., Springfield, Mass.

204 LAMP SOCKETS. See 299, Sockets, Incandescent Lamp.

205 LAMPS, ARC, ALTERNATING CURRENT. For series or parallel systems, having regulating mangets and feeding mechanisms adapted for alternating current.

Adams-Bagnall Electric Co., Cleveland, O.
American Electrical Mfg. Co., Philadelphia, Pa.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Ball Electric Co., 404 W. 27th St., New York.
Bogue, Chas. J., 213 Centre St., New York.
Columbia Electric & Mfg. Co., Newark, N. J.
Dayton Fan & Motor Co., 611 E. 3d St., Dayton, O.
Diamond Arc Lamp Co., 48 Mt. Vernon Ave., Mt. Vernon, N. Y.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Helios-Upton Co., Peabody, Mass.
Imperial Electric Lamp Co., 75 Fulton St., New York.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.

LAMPS, ARC, ALTERNATING CURRENT, continued.

Jandus Electric Co., Cleveland, O.
Keystone Electric & Mfg. Co., Allegheny, Pa.
Lea Electric Mfg. Co., Elwood, Ind.
National Arc Lamp Co., Lorain, O.
Pittsburg Electrical & Machine Works, Pittsburg, Pa
Safford Arc Lamp Mfg. Co., Buffalo, N. Y.
Shadowless Arc Light Co., Pittsburg, Pa.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Syracuse Arc Lamp Co., Syracuse, N. Y.
Toerring, C. J., Co., 1035 Ridge Ave., Philadelphia, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Westinghouse Machine Co., Pittsburg, Pa.

206 **Arc, Direct Current.** For series or parallel systems, having regulating magnets and feeding mechanisms adapted for direct current.

Adams-Bagnall Electric Co., Cleveland, O.
Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
American Electrical Mfg. Co., Philadelphia, Pa.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Anderson Tool Co., Anderson, Ind.
Ball Electric Co., 404 W. 27th St., New York.
Bogue, Chas. J., 213 Centre St., New York.
Continental Electric Co., Decatur, Ill.
Dayton Fan & Motor Co., 611 E. 3d St., Dayton, O.
Diamond Arc Lamp Co., 48 Mt. Vernon Ave., Mt. Vernon, N. Y.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Globe Electric Mfg. Co., Cleveland, O.
Graves, W. D., Electrical & Machine Co., Cleveland, O.
Hamblin, John A., Co., 25 Calender St., Providence, R. I.
Helios-Upton Co., Peabody, Mass.
Hobart Electric Mfg. Co., Troy, O.
Imperial Electric Lamp Co., 75 Fulton St., New York.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Jandus Electric Co., Cleveland, O.
Keystone Electric & Mfg. Co., Allegheny, Pa.
Lea Electric Mfg. Co., Elwood, Ind.
Lea-Hooven Mfg. Co., Anderson, Ind.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Mutual Electric & Machine Co., Wheeling, W. Va.
National Arc Lamp Co., Lorain, O.
Osborn-Morgan Co., Cass Ave., Cleveland, O.
Philadelphia Electrical & Mfg. Co., 2011 Market St., Philadelphia, Pa.
Pittsburg Electrical & Machine Works, Pittsburg, Pa.
Ritter Electrical Co., 200 Sycamore St., Cincinnati, O.
Safford Arc Lamp Mfg. Co., Buffalo, N. Y.
Shadowless Arc Light Co., Pittsburg, Pa.
Smith Electrical Engineering Co., Watertown, N. Y.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Syracuse Arc Lamp Co., Syracuse, N. Y.
Tenney, A. E., Mfg. Co., Pawtucket, R. I.

LAMPS, ARC, DIRECT CURRENT, continued.

Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Toerring, C. J., Co., 1035 Ridge Ave., Philadelphia, Pa.
Toledo Electric Lamp Co., Toledo, O.
Warner Electric Co., Muncie, Ind.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

207 **Arc, Photo-Engraving and Stage.** Focusing arc lamps having special reflectors for use in photo-engraving reproduction processes; and for Stereopticons.

Bogue, Chas. J., 213 Centre St., New York.
Fox, Arthur W., 83 Schermerhorn St., Brooklyn, N. Y.
General Electric Co., Schenectady, N. Y.
Graves, W. D., Electrical & Machine Co., Cleveland, O.
Helios-Upton Co., Peabody, Mass.
Menchen, Joseph, 1237 Broadway, New York.
Mutual Electric & Machine Co., Wheeling, W. Va.
Universal Electric Stage Lighting Co., 1393 Broadway, N. Y.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

208 **Arc, Submarine.** Water-tight enclosed lamps for use under water.

Krantz, H., Mfg. Co, 160-166 7th St., Brooklyn, N. Y.
Naval Electric Co., 95 Liberty St., New York.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.

209 **Incandescent.** Producing light by electrical incandescence of carbon filaments enclosed in glass vacuum tubes.

American Incandescent Lamp Co., Philadelphia, Pa.
Anchor Lamp Co., 258 Broadway, New York.
Banner Electric Co., Bane & Walnut Sts., Youngstown, O.
Bernstein Electric Mfg. Co., Gardner & Roxbury Sts., Boston.
Bryan-Marsh Co., 136 Liberty St., New York.
Buckeye Electric Co., Buffalo, N. Y.
Capital Electric Co., Denver, Colo.
Carlisle & Finch Co., 229 E. Clifton Av., Cincinnati, O.
Colonial Electric Co., Ravenna, O.
Colorado Lamp Co., Denver, Colo.
Columbia Incandescent Lamp Co., St. Louis, Mo.
Consumers Incandescent Lamp Co., Owensboro, Ky.
Diamond Incandescent Lamp Co., Denver, Colo.
Eastern Electric Co., 7 Water St., Boston, Mass.
Economical Electric Lamp Co., 123 Liberty St., New York.
Electrical Engineering Co., San Francisco, Cal.
Essex Lamp Co., Newark, N. J.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fostoria Incandescent Lamp Co., Fostoria, O.
Franklin Electric Mfg. Co., Hartford, Conn.
General Electric Co., Harrison, N. J.
General Incandescent Arc Light Co., 529 W. 34th St., New York.
General Incandescent Lamp Co., Cleveland, O.
Germania Electric Lamp Co., Harrison, N. J.

LAMPS, INCANDESCENT, continued.

Gilmore Electric Co., 625 First St., Boston, Mass.
Green & Bauer, 33 Wells St., Hartford, Conn.
Hardy Lamp Co., Box 796, Pittsfield, Mass.
Kentucky Electrical Co., Owensboro, Ky.
Liberty Lamp Co., Malden, Mass.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Missouri American Electric Co., 3327 Locust St., St. Louis, Mo.
Munder Electric Co., 26 Cortlandt St., New York.
National Incandescent Lamp Co., St. Louis, Mo.
Nernst Lamp Co., Pittsburg, Pa.
New England Lamp Co., Malden, Mass.
New York & Ohio Co., Warren, O.
Royal Incandescent Lamp Co., Cleveland, O.
Sawyer-Man Electric Co., 510 W. 23d St., New York.
Shelby Electric Co., Shelby, O.
Standard Electric Mfg. Co., Niles, O.
Sterling Electrical Mfg. Co., Warren, O.
Sunbeam Incandescent Lamp Co., 259 S. Clinton St., Chicago.
Tri-Light Electric Co., Birmingham, Ala.
Truitt, Clarence, St. Louis, Mo.
Twentieth Century Lamp Works, 1037 Walnut St., Philadelphia, Pa.
United States Incandescent Lamp Co., St. Louis, Mo.
Warren Electric & Specialty Co., Warren, O.

210 Incandescent Miniature. Of small sizes for ornamental purposes.

American Endiscopic Co., 212 Union St., Providence, R. I.
American Miniature & Decorative Lamp Co., 436 Broome St., New York.
Boehm, Herman, Youngstown, O.
Electric Contract Co., 202 Centre St., New York.
General Electric Co., Harrison, N. J.
Gilmore Electric Co., 625 First St., Boston, Mass.
Green & Bauer, 33 Wells St., Hartford, Conn.
Jaeger Miniature Lamp Mfg. Co., 8th St. and Fourth Ave., New York.
Lamont, G. E., San Francisco, Cal.
McCandless, H. W., & Co., 67 Park Place, New York.
Rooney-Westbury Electric Lamp Co., 154 E. 23d St., New York.
Warren Electric & Specialty Co., Warren, O.

211 Incandescent, Renewed. Having their burnt-out original filaments replaced by new filaments.

Anchor Lamp Co., 258 Broadway, New York.
Consolidated Electric Lamp Co., Danvers, Mass.
Cleveland Refilled Incandescent Lamp Co., Cleveland, O.
Economy Electric Co., Warren, O.
Electrical Engineering Co., San Francisco, Cal.
Gilmore Electric Co., 625 First St., Boston, Mass.
Lynn Incandescent Lamp Co., Lynn, Mass.
Merritt Mfg. Co., Middleton, Mass.
New York Lamp Co., 25 W. Broadway, New York.
Pacific Incandescent Lamp Co., San Francisco, Cal.
Re-new Lamp Co., 126 State St., Boston, Mass.
Schwalm, Geo. F., & Co., Harrison, N. J.
Sterling Electrical Mfg. Co., Warren, O.

212 **LANTERNS, ELECTRIC, PORTABLE.** Small incandescent lamps combined with portable encased batteries supplying current for them.

American Electrical Novelty & Mfg. Co., Hudson & Vandam Sts., New York.
American Endiscopic Co., 22 Union St., Providence, R. I.
Electric Contract Co., 202 Centre St., New York.
Fensterer & Ruhe, 47 Murray St., New York.
Howard Electric Novelty Co., 221 Canal St., New York.
Martin Electric Co., 32 Vesey St., New York.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
Portable Electric House Lamp Co., 10 Cortlandt St., New York.
Portable Electric Power & Light Co., 188 R. R. Ave., Jersey City, N. J.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Storage Battery Supply Co., 239 E. 27th St., New York.
Strobel & Wilken Co., 591 Broadway, New York.
Vesta Accumulator Co., 226 State St., Chicago, Ill.
White, J. H., Mfg. Co., 127 N. 10th St., Brooklyn, N. Y.

213 **LAUNCHES, ELECTRIC.** Propelled by electric motors using batteries for current supply.

Electric Launch Co., Avenue A & North St., Bayonne, N. J.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Kennedy, C. W., Philadelphia, Pa.

214 **LIGHTS, DESK.** Incandescent lamps having special shades adapted for desk use.

Berggren Electric Co., 414 Jackson St., St. Paul, Minn.
Boston Reflector Co., Boston, Mass.
Dale Co., 9th Ave. & 13th St., New York.
Faries Mfg. Co., Decatur, Ill.
Kinsman Electric & Railway Supply Co., 91 Liberty St., N. Y.
Klemm & Co., 132 N. 5th St., Philadelphia, Pa.
McLeod, Ward & Co., 27 Thames St., New York.
Ohio Electric Works, Cleveland, O.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Pacific Electric Co., 127 Main St., La Crosse, Wis.
Polacheck, Chas., & Bro. Co., 429 Chestnut St., Milwaukee, Wis.
Springfield Electrical Mfg. Co., Springfield, Mass.
Walsh, Owen, 19 Roosevelt St., New York.
White, J. H., Mfg. Co., 127 N. 10th St., Brooklyn, N. Y.
White, O. C., Co., Worcester, Mass.
Wieland Electric Co., Duluth, Minn.

215 **Pocket.**—See 212, Lanterns, Electric, Portable.

216 **LIGHTNING ARRESTERS.** Static discharging devices for protecting insulated aerial lines from charges of atmospheric electricity and lightning.

American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Automatic Lightning Arrester Co., Ravenna, O.
Bunnell, J. H., & Co., 20 Park Place, New York.
Butler-Taylor Co., Ravenna, O.
Central Union Brass Co.. St. Louis, Mo.
Chicago Die & Electric Co., 87 W. Lake St., Chicago, Ill.

LIGHTNING ARRESTERS, continued.

Couch & Seeley Co., 28 Binford St., Boston, Mass.
Crider, S. S., Sterling, Ill.
Ericsson Telephone Co., 296 Broadway, New York.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
Farr Telephone & Construction Supply Co., 118 W. Jackson Blvd, Chicago, Ill.
Foote, Pierson & Co., 82 Fulton St., New York.
Fort Wayne Electric Works, Fort Wayne, Ind.
Garton-Daniels Co., Keokuk, Ia.
General Electric Co., Schenectady, N. Y.
Harvard Electric Co., 226 S. Clinton St., Chicago, Ill.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Keystone Electric Telephone Co., Pittsburg, Pa.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Kokomo Telephone & Electric Mfg. Co., Kokomo, Ind.
Martin Electric Co., 32 Vesey St., New York.
Minnesota Electric Co., Minneapolis, Minn.
Modern Electric Co., Burlington, Iowa.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
National Electrical Mfg. Co., Milford, Conn.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
Rawson Electric Co., Elyria, O.
Rolfe Electric Co., 50 W. Jackson Blvd., Chicago, Ill.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sterling Electric Co., Lafayette, Ind.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.
Sumter Telephone Mfg. Co., Sumter, S. C.
Viaduct Mfg. Co., Baltimore, Md.
Vulcanized Rubber Co., 110 Grand St., New York.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.,
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Williams-Abbott Electric Co., Cleveland, O.

217 LINE MATERIALS, SPECIAL INSULATORS, LINE FITTINGS, ETC. For use upon transmission, telegraph, telephone and trolley lines.

American Hard Rubber Co., 9 Mercer St., New York.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Billings & Spencer Co., Hartford, Conn.
Central Union Brass Co., St. Louis, Mo.
Columbia Machine Works, Atlantic Ave. & Chestnut St., Brooklyn, N. Y.
Creaghead Engineering Co., Cincinnati, O.
Cutter, Geo., Co., Union & Fulton Sts., Chicago, Ill.
Edison-Johnson Electrical Mfg. Co., 1135 Broadway, New York.
Electric Railway Equipment Co., 431 E. Front St., Cincinnati.
Electrose Manufacturing Co., 127 N. 10th St., Brooklyn, N. Y.
Eureka Tempered Copper Works, North East, Pa.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Hutchins, A. E., Detroit, Mich.
Johns, H. W., Manville Co., 100 William St., New York.
Knowles, C. S., 7 Arch St., Boston, Mass.

LINE MATERIALS, ETC., continued.

Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
Lovell, F. H., & Co., 92 William St., New York.
MacAllen, W. T. C., & Co., 338 Congress St., Boston, Mass.
Michigan Bolt & Nut Works, Detroit, Mich.
Missouri Electrical Mfg. Co., St. Louis, Mo.
Norton Tool Co., West Park, Ohio.
Ohio Brass Co., Mansfield, O.
Ohio Electric Specialty Mfg. Co., 8 W. Main St., Troy, O.
Piqua Trolley Ear Co., Piqua, O.
Sterling Meaker Co., 420-422 Ogden St., Newark, N. J.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

218 **LINEMEN'S CONSTRUCTION TOOLS.** See 106, Construction Tools, Linemen's.

219 **LINKS, FUSE.**—See 354, Wire, Fuse.

220 **LOCKS, ELECTRIC.**—See 122, Door Openers, Electric.

221 **MAGNET WIRE.**—See 356, Wire, Insulated, Magnet.

222 **MAGNETO BELLS AND RINGERS.** Polarized electro-magnetic bells ringing upon low-frequency alternating currents, and permanent-field dynamos for generating such current.

Acme Electric Co., 194 S. Clinton St., Chicago, Ill.
American Electric Telephone Co., 38 W. Jackson Blvd., Chicago, Ill.
Chicago Telephone Supply Co., Elkhart, Ind.
Connecticut Telephone & Electric Co., Meriden, Conn.
Couch & Seeley Co., 26 Binford St., Boston, Mass.
Eureka Electric Co., 143 S. Clinton St., Chicago, Ill.
Farr Telephone & Construction Supply Co., 118 W. Jackson Blvd., Chicago, Ill.
Holtzer-Cabot Electric Co., Brookline, Mass.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Jenkins Electric Co., York, Pa.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Menominee Electric Mfg. Co., Menominee, Mich.
Mianus Electric Co., Mianus, Conn.
Monarch Telephone Co., 12 S. Clinton St., Chicago, Ill.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
R. I. Telephone & Electric Co., 24 Calender St., Providence, R. I.
Sterling Electric Co., Lafayette, Ind.
Stoddard Telephone Construction Co., Monroe, Mich.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.
Sumter Telephone Mfg. Co., Sumter, S. C.
Thordarsen, C. H., 153 S. Jefferson St., Chicago, Ill.
Telephone Mfg. Co., Sumter, S. C.
Utica Fire Alarm Telegraph Co., Utica, N. Y.
Viaduct Mfg. Co., Baltimore, Md.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Williams-Abbott Electric Co., Cleveland, O.
Williams Electric Co., Cleveland, O.

223 **MAGNETS, ELECTRO.** Which are rendered magnetic only during the passage of an electric current through coils surrounding the cores of soft iron.

American Electrical Works, Providence, R. I.
Ansonia Electrical Co., Ansonia, Conn.
Ball Electric Co., 404 W. 27th St., New York.
Bunnell, J. H., & Co., 20 Park Place, New York.
Bunnell Telegraphic & Electrical Co., 110 Beekman St., N. Y.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Electric Controller & Supply Co., Cleveland, O.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Foote, Pierson & Co., 82 Fulton St., New York.
General Electric Co., Schenectady, N. Y.
Glaenzer Freres & Rheinboldt, 26 Washington Pl., New York.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
McDermid Mfg. Co., 118 W. Jackson Boulvd., Chicago, Ill.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
Muncie Electric Co., Muncie, Ind.
National Electrical Mfg. Co., Milford, Conn.
Norton Electrical Instrument Co., Manchester, Conn.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pearce, Frederick, 18 Rose St., New York.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Splitdorf, C. F., 17 Vandewater St., New York.
Sumter Telephone Mfg. Co., Sumter, S. C.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Varley Duplex Magnet Co., Inc., Providence, R. I.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

224 **Permanent.** Magnets of hardened steel which retain their magnetization indefinitely.

American Electrical Works, Providence, R. I.
Holtzer-Cabot Electric Co., Brookline, Mass.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philada., Pa.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

225 **MAST ARMS.** For supporting arc lamps out over streets in street lighting.

Brady, Thos. H., 351 Main St., New Britain, Conn.
Buffalo Specialty Mfg. Co., Buffalo, N. Y.
Creaghead Engineering Co., Cincinnati, O.
Cutter, George, Co., Union & Fulton Sts., Chicago, Ill.
Davis, M., & Sons, Salem, Ohio.
Electric Railway Equipment Co., 431 E. Front St., Cincinnati.
Fort Wayne Electric Works, Fort Wayne, Ind.
Fletcher Mfg. Co., Dayton, O.
Johnson & Morton, Utica, N. Y.
Krantz, H., Manufacturing Co., 160-166 7th St., Brooklyn, N. Y.
Lundin Electric & Machine Co., Boston, Mass.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
Pettingell-Andrews Co., Atlantic Ave. & Pearl St., Boston, Mass.
Russell Electric Mfg. Co., Providence, R. I.
Safety Electric Switch Co., 144 Pine St., Providence, R. I.

MAST ARMS, continued.

Supply Mfg. Co., Pittsburg, Pa.
Walls, C. M., & Co., Worcester, Mass.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

226 **MEASURING INSTRUMENTS.** Instruments for measuring differences of potential, current strengths, etc., for determination of states of insulation, or grounding, of circuits, etc.

Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bristol Co., Waterbury, Conn.
Dongan Instrument Co., 100 State St., Albany, N. Y.
Duncan Electric Mfg. Co., Lafayette, Ind.
Eldredge Electric Mfg. Co., Springfield, Mass.
Electric Gas Lighting Co., Purchase, cor. Hartford St., Boston, Mass.
Empire Electrical Instrument Co., 654 Hudson St., New York.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Illinois Electric Specialty Co., Chicago, Ill.
Jewell Electrical Instrument Co., 61-63 Union Park Court, Chicago, Ill.
Keystone Electrical Instrument Co., 9th St. & Montgomery Ave., Philadelphia, Pa.
Knott, L. E., Apparatus Co., 14 Ashburton Place, Boston, Mass.
Leeds & Northrup Co., 259 N. Broad St., Philadelphia, Pa.
Nagle, W. G., Electric Co., 520 Adams St., Toledo, O.
Norton Electrical Instrument Co., Manchester, Conn.
Palmer Electrical Instrument Co., Philadelphia, Pa.
Pignolet, Louis M., 78 Cortlandt St., New York.
Prentiss Clock Improvement Co., 49 Dey St., New York.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
S. E. I. Co., Hall & McChesney Bldg., Syracuse, N. Y.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Stanley Instrument Co., Great Barrington, Mass.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Weston Electrical Instrument Co., Waverly Park, Newark, N. J.
Whitney Electrical Instrument Co., 203 Broadway, New York.
Willyoung & Gibson Co., 40 W. 13th St., New York.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

227 **METERS, RECORDING.**—See 265, Recording Meters.

228 **MINE LOCOMOTIVES, ELECTRIC.** Heavy trolley locomotives of low elevation for haulage in mines.

Baldwin Locomotive Works, Philadelphia, Pa.
General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., 48th & Halsted Sts., Chicago, Ill.
Jeffrey Mfg. Co., Columbus, O.
Pittsburg Locomotive & Car Works, Allegheny, Pa.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Wagner-Palmros Mfg. Co., Fairmont, W. Va.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Westinghouse Machine Co., Pittsburg, Pa.

229 **MOTOR-GENERATORS.** Direct current transformers, consisting of dynamos delivering the secondary current driven by motors operated on the primary currents.

Akron Electrical Mfg. Co., Akron, Ohio.
American Electrical Works, Providence, R. I.
Bullock Electric Mfg. Co., Cincinnati, Ohio.
Commercial Electric Co., Indianapolis, Ind.
Couch & Seeley Co., 26 Binford St., Boston, Mass.
C. & C. Electric Co., 143 Liberty St., New York.
Crocker-Wheeler Co., Ampere, N. J.
Cushman Electric Co., 253 Broadway, New York.
Dallett, Thos. H., & Co., York St. & Sedgley Ave., Philadelphia.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Holtzer-Cabot Electric Co., Brookline, Mass.
Jantz & Leist Electric Co., 808-810 Elm St., Cincinnati, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Kurz & Root, Appleton, Wis.
National Electric Co., Milwaukee, Wis.
New England Motor Co., Lowell, Mass.
Northern Electrical Mfg. Co., Madison, Wis.
Phoenix Electric Mfg. Co., Mansfield, Ohio.
Robbins & Myers Co., Springfield, Ohio.
Rochester Electric Motor Co., Rochester, N. Y.
Roth Bros., & Co., 27 S. Clinton St., Chicago, Ill.
Sprague Electric Co., 527 W. 34th St., New York.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Thomson Electric Welding Co., Lynn, Mass.
Three Rivers Electric Co., Three Rivers, Mich.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

230 **MOTORS, ELECTRIC.** Prime movers for transforming electrical energy into mechanical energy.

231 **Alternating Current.** Induction or synchronous, for use upon alternating current circuits.

Armitage-Herschell Co., North Tonawanda, N. Y.
Bullock Electric Mfg. Co., Cincinnati, O.
C. & C. Electric Co., 143 Liberty St., New York.
Electric Machinery Co., Minneapolis, Minn.
Emerson Electric Mfg. Co., St. Louis, Mo.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Holtzer-Cabot Electric Co., Brookline, Mass.
Parsell & Weed, 129 W. 31st St., New York.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

MOTORS, continued.

232 **Automobile, Electric.** Special series, or street railway types, for use upon automobiles with storage batteries.

Ajax Motor Vehicle Co., 220 W. 36th St., New York.
Akron Automobile Co., Akron, O.
Browning Mfg. Co., Milwaukee, Wis.
Bullock Electric Mfg. Co., Cincinnati, O.
Chapman, W. H., Portland, Me.
Davis, M., & Son, Salem, Ohio.
Elwell-Parker Electric Co., Cleveland, O.
Fisher Electric Mfg. Co., Detroit, Mich.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Keller, J., Canton, O.
Lamb & Co., Kent & Lyons Sts., Grand Rapids, Mich.
Lancaster, Jas. H., Co., 114 Liberty St., New York.
Lincoln Electric Co., 71-73 Ontario St., Cleveland, Ohio.
Merriam-Abbott Co., 60 E. Prospect St., Cleveland, O.
Milwaukee Electric Co., Milwaukee, Wis.
Munson Electric Motor Co., La Porte, Ind.
National Vehicle Co., Indianapolis, Ind.
New England Motor Co., Lowell, Mass.
Nieman, A. C., & Co., Lake & Clinton Sts., Milwaukee, Wis.
Olds Motor Works, Detroit, Mich.
Roth Bros. & Co., 27 So. Clinton St., Chicago, Ill.
Sprague Electric Co., 527 W. 34th St., New York.
Sterling Electric Motor Co., Dayton, O.
Studebaker Bros., Co., South Bend, Ind.
Thresher Electric Co., Dayton, O.
Triumph Electric Co., 610 Baymiller St., Cincinnati, Ohio.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

233 **Battery or Toy.** Of small sizes for use with primary batteries.

Crocker-Wheeler Co., Ampere, N. J.
Elbridge Electrical Mfg. Co., Elbridge, N. Y.
Electric Novelty Works, Atlanta, Ga.
Kendrick & Davis, Lebanon, N. H.
Knapp Electric & Novelty Co., 511 W. 51st St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Niagara Specialty Works, Manlius, N. Y.
Ohio Electric Works, Cleveland, O.
Parsell & Weed, 129 W. 31st St., New York.
Reek, John, Electrical Works, Camden, Mich.
R. I. Telephone & Electric Co., 24 Calender St., Providence, R. I.
Swope, Henry R., 120 N. 7th St., Philadelphia, Pa.
Victor Electric Co., 55-61 Market St., Chicago, Ill.

234 **Direct Current.** For use upon constant-potential direct-current circuits.

Aaron Electric Co., 141 S. Clinton St., Chicago, Ill.
Akron Electrical Mfg. Co., Akron, O.
American Engine Co., Bound Brook, N. J.
Barriett Electric Co., 327 E. 6th St., Cincinnati, O.
Bartz, Evans & Wygant, Hornellsville, N. Y.
Bell Electric Motor Co., 197 Wooster St., New York.
Benton, Thos. P., & Son, 200 S. Front St., La Crosse, Wis.

MOTORS, DIRECT CURRENT, continued.

Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.
Bogue, Chas. J., 213 Centre St., New York.
Browning Mfg. Co., Milwaukee, Wis.
Brunswick Mfg. Co., Brunswick, Me.
Buckley Electric & Mfg. Co., Kalamazoo, Mich.
Bullock Electric Mfg. Co., Cincinnati, O.
Bunnell, J. H., & Co., 20 Park Place, New York.
C. & C. Electric Co., 143 Liberty St., New York.
Central Electric & Foundry Co., Lewisburg, Pa.
Clark, James, Jr., & Co., Louisville, Ky.
Commercial Electric Co., Indianapolis, Ind.
Connecticut Dynamo & Motor Co., 526 W. 25th St., New York.
Corry Novelty Works, Corry, Pa.
Crescent Electrical & Repair Co., Pittsburg, Pa.
Crescent Iron Works, Springfield, Mo.
Crocker-Wheeler Co., Ampere, N. J.
Cushman Electric Co., 253 Broadway, New York.
D. & D. Electric Mfg. Co., Minneapolis, Minn.
Dallett, Thos. H., & Co., York St. & Sedgley Ave., Philadelphia.
Dayton Electrical Mfg. Co., Dayton, O.
Dayton Fan & Motor Co., Dayton, O.
Diehl Electric Co., Elizabethport, N. J.
Eager Electric Co., Watertown, N. Y.
Eagle Electric Works, Peoria, Ill.
Eck Dynamo & Motor Works, Main & Mill Sts., Belleville, N. J.
Elbridge Electrical Mfg. Co., Elbridge, N. Y.
Electrical Engineering Co., San Francisco, Cal.
Electrical Repair & Construction Co., Cleveland, O.
Electric Contracting & Repairing Co., Ithaca, N. Y.
Electric Machinery Co., Minneapolis, Minn.
Electric Novelty Works, Atlanta, Ga.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Elektron Mfg. Co., Springfield, Mass.
Elwell-Parker Electric Co., Hamilton St., Cleveland, O.
Emerson Electric Mfg. Co., St. Louis, Mo.
Engberg's Electrical & Mechanical Works, St. Joseph, Mich.
Federal Electric Co., 519 Myrtle St., Erie, Pa.
Fisher Electrical Works, Detroit, Mich.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne, Ind.
Fuller Co., Russell St. & Boulevard, Detroit, Mich.
G. & E. Electric Co., Binghamton, N. Y.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Goodman Mfg. Co., 48th & Halsted Sts., Chicago, Ill.
Goudey-McLean Co., 20 Liberty St., New York.
Goughnour Electric Co., Canton, O.
Grand Rapids Electric Co., Grand Rapids, Mich.
Hertner Electric Co., Cleveland, O.
Hobart Electric Mfg. Co., Troy, O.
Holtzer-Cabot Co., Brookline, Mass.
Jandus Electric Co., 108 Superior St., Cleveland, O.
Jantz & Leist Electric Co., 808-810 Elm St., Cincinnati, Ohio.
Jenney Electric Mfg. Co., Indianapolis, Ind.
Kentucky Electrical Co., Owensboro, Ky.
Keystone Electric Co., Erie, Pa.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.

MOTORS, DIRECT CURRENT, continued.

Kurz & Root, Appleton, Wis.
Lagerquist, Gust., Minneapolis, Minn.
Lake St. Mfg. Co., Chicago, Ill.
Lamb & Co., Kent & Lyons Sts., Grand Rapids, Mich.
La Roche, F. A., Co., 652 Hudson St., New York.
Lincoln Electric Co., 71-73 Ontario St., Cleveland, Ohio.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Mayer, Maxwell M., Electric Co., 120 Liberty St., New York.
Mechanical Appliance Co., Milwaukee, Wis.
Menominee Electric Mfg. Co., Menominee, Mich.
Meriam-Abbott Co., Cleveland, O.
Mianus Motor Co., Mianus, Conn.
Milwaukee Electric Co., Milwaukee, Wis.
Morgan-Gardner Electric Co., 2638 Shields Ave., Chicago, Ill.
Moore-Edenfield Electric Mfg. Co., Augusta, Ga.
National Electric Co., Milwaukee, Wis.
National Stamping Works, Michigan St. & La Salle Ave., Chicago, Ill.
New England Motor Co., Lowell, Mass.
Nieman, A. C., & Co., Milwaukee, Wis.
Northern Electrical Mfg. Co., Madison, Wis.
Northern Engineering Co., 95 Liberty St., New York.
Northwestern Electric Co., St. Paul, Minn.
Otis Elevator Co., Yonkers, N. Y.
P. & W. Electric Co., Lafayette, Ind.
Paragon Electric Fan Motor Co., 572 1st Ave., New York.
Parsell & Weed, 129 West 31st St., New York.
Pawling & Harnischfeger, Milwaukee, Wis.
Peerless Electric Co., Warren, O.
Peerless Electric Co., 141 S. Clinton St., Chicago, Ill.
Phoenix Electric Mfg. Co., Mansfield, O.
Portland Co., Inc., Portland, Me.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philadelphia, Pa.
Reek, John, Electrical Works, Camden, Mich.
Reliance Electric Co., Milwaukee, Wis.
Ricard Boiler & Engine Works, Toledo, O.
Richmond Electric Co., Richmond, Va.
Richter Electric Co., Camden, N. J.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Ritter Electrical Co., 118 W. 2d St., Cincinnati, O.
Robbins & Myers Co., Springfield, O.
Rochester Electric Motor Co., Rochester, N. Y.
Roth Bros. & Co., 27 S. Clinton St., Chicago, Ill.
Rumsey Electric Co., Detroit, Mich.
S. & H. Electrical Co., Skaneateles, N. Y.
Sheffield Car Co., Three Rivers, Mich.
Sperry Electric Railway Co., Cleveland, O.
Sprague Electric Co., 527 W. 34th St., New York.
Star Dynamo Works, Jefferson City, Mo.
Sterling Electric Motor Co., Dayton, O.
Stow Mfg. Co., Binghamton, N. Y.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Swett, A. L., Iron Works, Medina, N. Y.
Taylor & Hough, St. Paul, Minn.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Thompson Electric Works, 346 Wabash Ave., Chicago, Ill.

MOTORS, DIRECT CURRENT, continued.

Three Rivers Electric Co., Three Rivers, Mich.
Thresher Electric Co., Dayton, O.
Towle, George C., Mfg. Co., Lancaster, Pa.
Triumph Electric Co., 610 Baymiller St., Cincinnati, O.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Watts Electric Co., 701 Indiana St., Indianapolis, Ind.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

235 **Fan.** See 135, Fans, Electric.

236 **Street Railway.** Low-duty series, for use in controller combinations on direct current railway circuits.

Bullock Electric Mfg. Co., Cincinnati, Ohio.
Commercial Electric Co., Indianapolis, Ind.
Crocker-Wheeler Co., Ampere, N. J.
Elwell-Parker Electric Co., Cleveland, O.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Keystone Electric Co., Erie, Pa.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Thresher Electric Co., Dayton, O.
Triumph Electric Co., 610 Baymiller St., Cincinnati, O.
Van Loan I. S. Co., 465 Greenwich St., New York.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

237 **MOTOR-STARTERS.**—See 281, Rheostats, Adjustable, Motor Starting.

238 **MOLDING, WIRE.** Strips of dried wood with longitudinal grooves for receiving and protecting electrical conductors in interior wiring.

American Hardwood Mfg. Co., Grottoes, Va.
Holmes, Booth & Haydens Co., Waterbury, Conn.
Johnson Bros., 45 Classon Ave., Brooklyn, N. Y.
Lever, C. H., Mfg. Co., Longwood, Ill.
Massachusetts Mfg. & Electrical Supply Co., Chelsea, Mass.
Noblett, E. J., Co., 898 W. 35th St., Chicago, Ill.
Robinson, J. J., & Co., Bloomsburg, Pa.
Saulpaugh's, James M., Sons, 706 East 12th St., New York.
Scheidel, W., & Co., 181 Randolph St., Chicago, Ill.
Tomlinson & Greene, 260 W. Broadway, New York.
Wright & Craycroft, 518 W. 21st St., Chicago, Ill.

239 **OHMMETERS.**—See 333, Testing Instruments.

240 **OPENERS, DOOR, ELECTRIC.**—See 122, Door Openers, Electric.

241 **OUTLET BOXES.**—See 198, Junction and Outlet Boxes.

242 **PANEL BOARDS.** Small distrubuting switchboards with cut-out switches and fuses for use in connecting feeders to mains and branches in interior wiring.

Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Andrae, Julius, & Sons Co., Milwaukee, Wis.
Atkinson, J. M., Co., 2427 Calumet Ave., Chicago, Ill.
Banner Electric Co., Bane & Walnut Sts., Youngstown, Ohio.
Beck Electric Co., St. Louis, Mo.
Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.
Bissell, F., Co., 226-230 Huron St., Toledo, O.
Bossert Electric Construction Co., Capital Ave. & York St., Utica, N. Y.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Bullock Electric Mfg. Co., Cincinnati, O.
Camden & Underwood, Parkersburg, W. Va.
Chase-Shawmut Co., Newburyport, Mass.
Clark, Burris Mfg. Co., 65 S. Canal St., Chicago, Ill.
Cleveland Switchboard & Elec. Mfg. Co., 14 Middle St., Cleveland, O.
Commercial Electric Co., Indianapolis, Ind.
Crouse-Hinds Electric Co., Syracuse, N. Y.
Davis, M., & Sons, Salem, Ohio.
Eagle Electric Works, Peoria, Ill.
Electric Railway Switch & Supply Co., Springfield, Mass.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Erner Electric Co., 62 Public Square, Cleveland, Ohio.
Evans, Wm. A., & Bros., Pittsburg, Pa.
Eyanson, Geo. T., Commerce & 7th Sts., Philadelphia, Pa.
Fisher Electrical Works, Detroit, Mich.
Fisher, J. J., & Co., Crafton, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Graves, W. D., Electrical & Machine Co., 20 Michigan St., Cleveland, O.
Heinemann, George, & Co., 737 Girard Ave., Philadelphia, Pa.
Helios-Upton Co., Peabody, Mass.
Herman, R., Crafton, Pa.
Hewitt & Warden, Newburgh, N. Y.
Hill, W. S., Electric Co., New Bedford, Mass.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johnson & Morton, Utica, N. Y.
Jones, J., & Son, 64 Cortlandt St., New York.
Knowles, C. S., 7 Arch St., Boston, Mass.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
La Roche, F. A., Co., 652 Hudson St., New York.
Lindsey, H. E., Electrical Supply Co., 917 Market St., St. Louis.
Linton, G. E., & Co., Worcester, Mass.
Little, F. P., Electrical Construction & Supply Co., 135 Seneca St., Buffalo, N. Y.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
McCarthy Bros. & Ford, Buffalo, N. Y.
Metropolitan Switchboard Co., 227 W. 29th St., New York.
Michigan Electric Co., Detroit, Mich.

PANEL BOARDS, continued.

Minnesota Electric Co., Minneapolis, Minn.
Nailler, R. F., Akron, O.
New York Switchboard & Mfg. Co., 516 W. 36th St., New York.
Northern Engineering Co., 95 Liberty St., New York.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.
Pearce, Frederick, 18 Rose St., New York.
Penn Electrical & Mfg. Co., Irwin, Pa.
Peru Electric Mfg. Co., Peru, Ind.
Pittsburg Construction & Engineering Co., Pittsburg, Pa.
Pittsburg Electrical & Machine Works, Pittsburg, Pa.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philadelphia, Pa.
Reading Gas & Electric Fixture Co., 133 Pearl St., Reading, Pa.
Renim Specialty Co., 176 Federal St., Boston, Mass.
Rumsey Electric Co., Detroit, Mich.
Schoenman Electric Mfg. Co., Allegheny, Pa.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Sipp Electric & Machine Co., Paterson, N. J.
Springfield Electrical Mfg. Co., Springfield, Mass.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Supply Mfg. Co., Pittsburg, Pa.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Triumph Electric Co., 610 Baymiller St., Cincinnati, Ohio.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Walker Electric Co., 2318-2338 Noble St., Philadelphia, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Weston, William H., & Co., Philadelphia, Pa.
White, H. P., Co., Philadelphia, Pa.
Wurdack, Wm., St. Louis, Mo.
York Electric & Mach. Co., York, Pa.
Zimdars & Hunt, 52 Grove St., New York

243 **PENDANTS, ELECTRIC.**—See 144, Fixtures, Electric.

244 **PHOTOMETERS.** Apparatus for determination of light-giving power of incandescent lamps in candle power.

Dwyer Machine Co., Lynn, Mass.
Electric Motor & Equipment Co., 13 Beaver St., Newark, N. J.
Foote, Pierson & Co., 82 Fulton St., New York.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Whitney Electrical Instrument Co., 203 Broadway, New York.
Willyoung & Gibson Co., 40 W. 13th St., New York.
York Electric & Mach. Co., York, Pa.

245 **PINS, INSULATOR.**—See 50, Brackets and Pins, Insulator.

246 **PLUG CUT-OUTS, TELEGRAPH.**—See 324, Telegraphic Apparatus.

247 **PLUGS, ATTACHMENT.** Connecting devices for insertion into sockets or spring jacks, for connecting into a main circuit any branch circuit or current receptive device.

American Coil Co., West Somerville, Mass.
American Electrical Supply Co., 40 S. Howard St., Baltimore.
American Machine Mfg. Co., 251 Congress St., Boston, Mass.

PLUGS, ATTACHMENT, continued.

Benjamin Electric Mfg. Co., 141 S. Clinton St., Chicago, Ill.
Bean, A. E., Automobile Co., 6 Winter St., Boston, Mass.
Bradley Motor Co., 268 Diamond St., Philadelphia, Pa.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Crouse-Hinds Electric Co., Syracuse, N. Y.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Eureka Mfg. Co., St. Paul, Minn.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Gibson, Cecil E., 116 E. Ohio St., Indianapolis, Ind.
Hubbell, Harvey, Bridgeport, Conn.
Hydra Battery Co., 70 Reade St., New York.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Johns, H. W.-Manville Co., 100 William St., New York.
Knowles, C. S., 7 Arch St., Boston, Mass.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Menchen, Joseph, 1237 Broadway, New York.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
New England Electric Mfg. Co., West Somerville, Mass.
Novelty Electric Co., 50 N. 4th St., Philadelphia, Pa.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
Pass & Seymour, Inc., Solvay, N. Y.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Torbenson Gear, Inc., Bloomfield, N. J.
Trumbull Electric Co., Plainville, Conn.
Universal Electric Stage Lighting Co., 1393 Broadway, N. Y.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Witherbee Igniter Co., 25 W. 33d St., New York.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

248 **POCKET LIGHTS.** See 212, Lanterns, Electric, Portable.

249 **POLARITY INDICATORS.**—See 333, Testing Instruments.

250 **POLE BRACKETS.** See 50, Brackets and Pins, Insulator.

251 **POLE CHANGERS.**—See 262, Quadruplex and Duplex Telegraph Apparatus.

252 **POLES, TRANSMISSION LINE, TELEPHONE LINE, ETC.** Wooden poles usually of cedar, for use in pole lines.

Brady, Thos. H., 351 Main St., New Britain, Conn.
Central Mfg. Co., Chattanooga, Tenn.
Creaghead Engineering Co., Cincinnati, O.
Eccleston Lumber Co., 29 Broadway, New York. *See adv. page 73.*

POLES, TELEPHONE, continued.

Greenbrier Pole Co., 1022 Real Estate Trust Bldg., Philadelphia, Pa.
Maltby Lumber Co., Bay City, Mich.
Moorehead & Schotte, Kittanning, Pa.
Phelan, D. W., 277 Broadway, New York.
Porter Cedar Co., Saginaw, Mich.
Simmons, John Co., 106 Centre St., New York.
Standard Pole and Tie Co., 44 Broad St., New York. *See adv. page 71.*
Sterling, W. C., & Son, Monroe, Mich.
Strock, S. C., 11 Broadway, New York.
Viaduct Mfg. Co., Baltimore, Md.
Worcester, C. H., Co., Marinette, Wis.

253 **Trolley.** Special poles of wood or metal for use on street trolley lines.

Atlantic Tube Co., Pittsburg, Pa.
Detroit Trolley & Mfg. Co., Ltd., Detroit, Mich.
Electric Railway Equipment Co., 431 E. Front St., Cincinnati, O.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
Ordway, B. F., & Co., Fitchburg, Mass.
Pittsburg Trolley Pole Co., Pittsburg, Pa.
Shelby Steel Tube Co., Pittsburg, Pa.
Standard Pole and Tie Co., 44 Broad St., New York. *See adv. page 71.*
Stanley Electric Mfg. Co., Pittsfield, Mass.
Supply Mfg. Co., Pittsburg, Pa.
Union Railway Supply Co., 1633 Real Estate Trust Bldg., Philadelphia, Pa.
Wyckoff Pipe & Creosoting Co., Inc., Stamford, Conn.

254 **PORCELAIN CLEATS.**—See 87, Cleats, Porcelain.

255 **PORCELAIN INSULATORS.**—See 192, Insulators, Porcelain.

256 **PORCELAIN AND CLAY TUBES.**—See 342, Tubes, Wiring.

257 **POROUS CUPS.** Unglazed earthenware cells permitting passage of liquid through walls, for use in double liquid batteries.

Cartwright Bros., East Liverpool, O.
Eastern Carbon Works, Jersey City, N. J.
Edgerton Pottery Co., Edgerton, Wis.
Fidelity Pottery Co., Trenton, N. J.
Jersey City Pottery Co., Jersey City, N. J.
Marion Pottery Works, 29 Larch Ave., Jersey City, N. J.
Mayer Pottery Co., Beaver Falls, Pa.
National Carbon Co., W. Madison & Highland Aves., Cleveland, O.
New England Pottery Co., 146 Condor St., Boston, Mass.
New York Pottery Co., W. 36th St., New York.
Philadelphia City Pottery Co., 2715 Edgemont St., Philadelphia. Pa.
Rodefer Bros., Bellaire, O.
Salem Glass Works, Salem, N. J.

258 **PORTABLE TESTING SETS.**—See 333, Testing Instruments.

259 **PROJECTORS.**—See 287, Search Lights.

260 **PROTECTORS, TELEPHONE LINE.** Special fuses and heat. coils for protection of delicate telephone circuits from "sneak" currents.

American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Harvard Electric Co., 226 So. Clinton St., Chicago, Ill.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Johns, H. W.-Manville Co., 100 William St., New York.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Rolfe Electric Co., 50 W. Jackson Blvd., Chicago, Ill.
Sterling Electric Co., Lafayette, Ind.
Sumter Telephone Mfg. Co., Sumter, S. C.

261 **PUSH BUTTONS.** For closing a circuit by pressure upon a button.

American Car & Ship Hardware Mfg. Co., New Castle, Pa.
American Hard Rubber Co., 9 Mercer St., New York.
Ansonia Electrical Co., Ansonia, Conn.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Delaware Hard Fibre Co., Wilmington, Del.
Dickinson Hard Rubber Co., Springfield, Mass.
Edwards & Co, 405-409 E. 144th St., New York.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
General Electrical Co., Schenectady, N. Y.
Hardware Specialty Co., Newark, N. J.
Keil, Francis, & Son, 671 East 163d St., New York.
La Roche, F. A., Co., 652 Hudson St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
Modern Electric Co., Burlington, Iowa.
Moon Mg. Co., 47 S. Canal St., Chicago, Ill.
Mutual E'ectric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
Novelty Electric Co., 34 N. Fourth St., Philadelphia, Pa.
Ostrander, W. R., & Co., 22 Dey St., New York.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Randall-Loudon Electrical Co., Memphis, Tenn.
Rauscher, John, St. Paul, Minn.
Reading Hardware Co., Reading, Pa.
Renim Specialty Co., 176 Federal St., Boston, Mass.
Russell & Erwin Mfg. Co., New Britain, Conn.
Sargent & Co., 151 Leonard St., New York.
Spencer, I. S., Sons, Guilford, Conn.
Star Electric Co., Binghamton, N. Y.
Tucker, Frank S., & Co., Boston, Mass.
Union Hardware Co., Torrington, Conn.
Viaduct Mfg. Co., Baltimore, Md.
Walsh, Owen, 19 Roosevelt St., New York.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Wilhelm, H., 70 Frost St., Brooklyn, N. Y.

262 **QUADRUPLEX AND DUPLEX TELEGRAPH APPARATUS.**—See 324, Telegraph Instruments.

263 **RAIL BONDS.** Connecting wires or strips for use of rail joints to bring adjacent rails into good electrical contact.

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Atkinson, J. M., Co., 2427 Calumet Ave., Chicago, Ill.
Bridgeport Brass Co., Bridgeport, Conn.
Brown, Harold P., 120 Liberty St., New York.
Bryan, James, & Co., Pittsburg, Pa.
Bunnell, J. H., & Co., 20 Park Place, New York.
Chase-Shawmut Co., Newburyport, Mass.
Cleveland Bronze & Brass Works, Cleveland, Ohio.
Columbia Machine Works, Atlantic Ave. & Chestnut St., Brooklyn, N. Y.
Eureka Tempered Copper Works, North East, Pa.
General Electric Co., Schenectady, N. Y.
Johns, H. W., Manville Co., 100 William St., New York.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Michigan Bolt & Nut Works, Detroit, Mich.
Ohio Brass Co., Mansfield, Ohio.
Perfection Rail Bond Co., 1503 Monadnock Block, Chicago, Ill.
Peterson, J. L., & Co., Galesburg, Ill.
Protected Rail Bond Co., Philadelphia, Pa.
Roebling's, John A., Sons Co., Trenton, N. J.
Sterion Copper, Brass & Bronze Co., 63 N. Ashland Ave., Chicago, Ill.

264 **RECEIVERS, TELEPHONE.**—See 328, Telephones.

265 **RECORDING METERS.** Instruments for recording varying values of electrical measurements, or of intergrading continually their totalized values.

Bristol Co., Waterbury, Conn.
Bullock Electric Mfg. Co., Cincinnati, Ohio.
Edmonds-Metzel Mfg. Co., 153 S. Jefferson St., Chicago, Ill.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Weston Electrical Instrument Co., Waverly Park, Newark, N. J.

266 **RECEPTACLES.** See 299, Sockets; also 247, Plugs, Attachment.

267 **REELS, WIRE, PAY-OUT AND TAKE-UP.** For handling wire in pole line construction.

Anderson, Homer, Peekskill, N. Y.
Anderson, W. H., & Sons, 21 St. Aubin Ave., Detroit, Mich.
Bissell, F., Co., 226 to 230 Huron St., Toledo, O.
Dicke Tool Co., Downers Grove, Ill.
Hanne Bros., Jacksonville, Fla.
Jones, J., & Son, 64 Cortlandt St., New York.
Klein, Mathias, & Son, 87 W. Van Buren St., Chicago, Ill.
Minneapolis Electric & Construction Co., Minneapolis, Minn.
Noblett, E. J. Co., 898 W. 35th St., Chicago, Ill.
Oshkosh Logging Tool Co., Oshkosh, Wis.
Roberts, Geo., Pittsburg, Pa.
Woonsocket Spool & Shuttle Co., Woonsocket, R. I.

268 **REFLECTORS, INCANDESCENT LAMP.** Of special shapes for use with incandescent lamps.

American Reflector & Lighting Co., 2018 Van Buren St., Chicago, Ill.
Bailey Reflector Co., Pittsburg, Pa.
Chicago Lamp Works, 77 Blue Island Ave., Chicago, Ill.
Cutter, Geo., Co., Union & Fulton Sts., Chicago, Ill.
De Ginther, Geo. M., Philadelphia, Pa.
Federal Electric Co., 76 Market St., Chicago, Ill.
Frink, I. P., 551 Pearl St. New York.
McLeod, Ward & Co., 27 Thames St., New York.
Martin Electric Co., 32 Vesey St., New York.
Menchen, Joseph,1 237 Broadway, New York.
Mt. Washington Glass Co., New Bedford, Mass.
Murray, Jas. J., & Co., Trenton, cor. Allegheny Ave., Philadelphia, Pa.
National X-Ray Reflector Co., 26 Cortlandt St., New York.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Philadelphia Electrical Mfg. Co., 2011 Market St., Philadelphia, Pa.
Phoenix Glass Co., Pittsburg, Pa.
Pittsburg Brass Co., Allegheny, Pa.
Tea Tray Co., Mulberry & Murray Sts., Newark, N. J.
Western Reflector Co., Chicago, Ill.
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.

269 **REGISTERS, MORSE-INK-WRITING.**—See 324, Telegraph Instruments.

270 **REGISTERS, VOLTAGE, CURRENT, PRESSURE, ETC.** For making permanent records of varying values of voltage, current, pressure, etc.

Bristol Co., Waterbury, Conn.
Bunnell, J. H., & Co., 20 Park Place, New York.
Foote, Pierson & Co., 82 Fulton St., New York.
General Electric Co., Schenectady, N. Y.
Gurley, W. & L. E., Troy, New York.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Star Electric Co., Binghamton, N. Y.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

271 **Watchman's.**—See 344, Watchman's Time Detector Systems.

272 **REGULATORS.**—See 279, Rheostats, Adjustable.

273 **RELAYS.**—See 324, Telegraph Instruments.

274 **REPEATERS.**—See 324, Telegraph Instruments.

275 **REPLACERS AND CLEANERS, INCANDESCENT LAMP.** For handling lamps on high ceilings and in other inaccessible positions.

McCreary Electric Co., 136 Liberty St., New York.

276 **RESISTANCE BOXES.**—See 333, Testing Instruments.

277 **RESISTANCE COILS.** Coils of resistance wire of known resistances, for use as standards in comparing resistances.

American Electrical Works, Providence, R. I.

Ansonia Electrical Co., Ansonia, Conn.
Bunnell, J. H., & Co., 20 Park Place, New York.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Edwards & Co., 405-409 E. 144th St., New York.
Foote, Pierson & Co., 82 Fulton St., New York.
International Brass & Electric Co., 76 Beekman St., New York.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Knott, L. E. Apparatus Co., 14 Ashburton Place, Boston, Mass.
Modern Electric Co., Burlington, Iowa.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Sumter Telephone Mfg. Co., Sumter, S. C.
Varley Duplex Magnet Co., Inc., Providence, R. I.
Wagner, R. V., & Co., 308 Dearborn St., Chicago, Ill.
Ward, Leonard, Electric Co., Bronxville, N. Y.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Whitney Electrical Instrument Co., 203 Broadway, New York.
Willyoung & Gibson Co., 40 W. 13th St., New York.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

278 **RESISTANCE RODS.**—See 283, Rods, Resistance.

279 **RHEOSTATS, ADJUSTABLE, CAUTERY.** Groups of resistance coils or strips, variable amounts of which may be thrown into circuits for varying the potential differences available.

Automatic Switch Co., 131 Liberty St., New York.
Birtman, C. F., Co., 45 Randolph St., Chicago, Ill.
Cutler-Hammer Mfg. Co., 12th St. & St. Paul Ave., Milwaukee, Wis.
Electro-Medical Mfg. Co., 59th & Wallace Sts., Chicago, Ill.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Globe Electric Controller Co., Amsterdam, N. Y.
McElliott & Becker, 35 State St., Chicago, Ill.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago.
Prometheus Electric Co., 39 Cortlandt St., New York.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Wapper Electric Controller Co., 177 E. 87th St., New York.
Ward, Leonard, Electric Co., Bronxville, N. Y.
Wirt Electric Co., 4523 Tacony Rd., Philadelphia, Pa.

280 **Adjustable, Field.**

Automatic Switch Co., 131 Liberty St., New York.
Cutler-Hammer Mfg. Co., 12th St. & St. Paul Ave., Milwaukee, Wis.
Cutter Electrical & Mfg. Co., 1728 Spring Garden St., Philadelphia, Pa.
Fort Wayne Electric Works, Fort Wayne, Ind.

RHEOSTATS, ADJUSTABLE FIELD, continued.

General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Prometheus Electric Co., 39 Cortlandt St., New York.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Schaefer Bros., 12 Julius St., Chicago, Ill.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Wagner Electrical Mfg. Co., 2017 Locust St., St. Louis, Mo.
Ward, Leonard, Electric Co., Bronxville, N. Y.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Wirt Electric Co., 4523 Tacony Rd., Philadelphia, Pa.

281 **Adjustable, Motor Starting and Regulating.**

Automatic Switch Co., 131 Liberty St., New York.
C. & C. Electric Co., 143 Liberty St., New York.
Carpenter Enclosed Resistance Co., 79 E. 130th St., New York.
Cutler-Hammer Mfg. Co., 12th St. & St. Paul Ave., Milwaukee, Wis.
Cutter Electrical & Mfg. Co., 1728 Spring Garden St., Philadelphia, Pa.
Federal Electric Co., 519 Myrtle St., Erie, Pa.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Globe Electric Controller Co., Amsterdam, N. Y.
Graves, W. D., Electrical & Machine Co., 20 Michigan St, Cleveland, O.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Jenney Electric Mfg. Co., Indianapolis, Ind.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Lincoln Electric Co., 71-73 Ontario St., Cleveland, Ohio.
Ohio Electric Specialty Co., 8 W. Main St., Troy, Ohio.
Peerless Electric Co., Warren, O.
Prometheus Electric Co., 39 Cortlandt St., New York.
Putnam, J. E., & Co., Rochester, N. Y.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philadelphia, Pa.
Schaefer Bros., 12 Julius St., Chicago, Ill.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Three Rivers Electric Co., Three Rivers, Mich.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Ward, Leonard, Electric Co., Bronxville, N. Y.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Wirt Electric Co., 4523 Tacony Rd., Philadelphia, Pa.

282 **Adjustable, Theatre Dimming.**

Cutler-Hammer Mfg. Co., 12th St. & St. Paul Ave., Milwaukee, Wis.
Menchen, Joseph, 1237 Broadway, New York.
Prometheus Electric Co., 39 Cortlandt St., New York.
Schaefer Bros., 12 Julius St., Chicago, Ill.
Simplex Electric Heating Co., Sidney & Auburn Sts., Cambridgeport, Mass.
Three Rivers Electric Co., Three Rivers, Mich.

RHEOSTATS, ADJUSTABLE, THEATRE DIMMING, continued.

Union Electric Mfg. Co., 615 Clybourne St., Milwaukee, Wis.
Universal Electric Stage Lighting Co., 1393 Broadway, N. Y.
Ward, Leonard, Electric Co., Bronxville, N. Y.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Wirt Electric Co., 4523 Tacony Rd., Philadelphia, Pa.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

283 **RODS, RESISTANCE.** Rods of conducting material of known resistances for use in rheostats.

Dixon, Joseph, Crucible Co., Jersey City, N. J.
Jewell Electrical Instrument Co., 61-63 Union Park Court, Chicago, Ill.

284 **ROSETTES.**—See 117, Cut-Outs, Incandescent.

285 **ROTARY CONVERTERS.**—See 229, Motor-Generators.

286 **RUHMKORFF COILS.**—See 182, Induction Coils.

287 **SEARCH LIGHTS.** Combinations of high candle-power focusing arc lamps and suitable reflectors and lens for projecting beams of light to great distances.

Benton, Thos. P., & Son, 200 S. Front St., La Crosse, Wis.
Bogue, Chas. J., 213 Centre St., New York.
Carlisle & Finch Co., 229 E. Clifton Ave., Cincinnati, O.
Engberg's Electrical & Mechanical Works, St. Joseph, Mich.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Green, J. B., Electric Co., Evansville, Ind.
Naval Electric Co., 95 Liberty St., New York.
Rolfe Electric Co., 50 W. Jackson Blvd., Chicago, Ill.
Rushmore Dynamo Works, Plainfield, N. J.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Sterling Electric Co., Lafayette, Ind.

288 **SEGMENTS, COMMUTATOR.**—See 97, Commutator Bars.

289 **SHADE HOLDERS.** Attachments to incandescent lamp sockets for supporting shades and reflectors.

Dale Co., 9th Ave. & 13th St., New York.
Housatonic Mfg. Co., New Haven, Conn.
Plume & Atwood Mfg. Co., Waterbury, Conn.
Polacheck, Chas., & Bro. Co., 429 Chestnut St., Milwaukee, Wis.
Steele & Johnson Mfg. Co., Waterbury, Conn.
Waterbury Mfg. Co., Waterbury, Conn.
White, J. H., Manufacturing Co., 127 N. 10th St., Brooklyn, N. Y.

290 **SHADES AND GLOBES.**—See 163, Globes, Shades, etc.

291 **SIGNAL SYSTEMS, FIRE ALARM, MANUAL.** Apparatus for transmission of alarms of fire, including signal boxes, automatic repeaters, registers, etc.

Amber Electric Mfg. Co., 60-62 W. Monroe St., Chicago, Ill.
Automatic Electric Alarm Co., San Francisco, Cal.
Edwards & Co., 405-409 E. 144th St., New York.
Gamewell Fire Alarm Telegraph Co., 19 Barclay St., New York.

SIGNAL SYSTEMS, FIRE ALARM, continued.

Garl Electric Co., Akron, O.
Herzog Telephone System Co., 170 Broadway, New York.
Magneto Electric Co., Amsterdam, N. Y.
Manhattan Fire Alarm Co., 19 Barclay St., New York.
Modern Electric Co., Burlington, Iowa.
National Autophone Co., Chicago, Ill.
National Electrical Mfg. Co., Milford, Conn.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pearce, Frederick, 18 Rose St., New York.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.
Specialty Fire Alarm Electrical Signal Co., 18 Rose St., New York.
Standard Electric Signal Co., 107 State St., Rochester, N. Y.
Star Electric Co., Binghamton, N. Y.
Stephens, Geo. M., 15 Chardon St., Boston, Mass.
Teleseme Electric Mfg. Co., 51 W. 24th St., New York.
United States Fire & Police Telegraph Co., 381 Albany St., Boston, Mass.
Utica Fire Alarm Telegraph Co., Utica, N. Y.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

292 **Thermostatic.**

American Automatic Fire Alarm Co., Cleveland, Ohio.
Anderson, Theodore P., Co., New York.
Automatic Electric Alarm Co., San Francisco, Cal.
Boston Automatic Fire Alarm Co., 104 Milk St., Boston, Mass.
Bunnell, J. H., & Co., 20 Park Place, New York.
Copenhagen Automatic Fire Alarm Co., Sheboygan, Wis.
Garl Electric Co., Akron, O.
Herzog Teleseme Co., 51 West 24th St., New York.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Milwaukee Automatic Fire Service Co., Milwaukee, Wis.
Montauk Fire Detecting Wire Co., 100 Broadway, New York.
National Automatic Fire Alarm Co., Baltimore, Md.
National Fire Appliance Co., 161 Franklin St., Boston, Mass.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
Penn Heat Alarm Co., Pittsburg, Pa.
Standard Electric Signal Co., 107 State St., Rochester, N. Y.
Teleseme Electric Mfg. Co., 51 W. 24th St., New York.
Viaduct Mfg. Co., Baltimore, Md.
Vierkant, H. C., Tarrytown, N. Y.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

293 **Police.** Apparatus for transmission of police alarms, including signal boxes, registers, etc.

Amber Electric Mfg. Co., 60-62 W. Monroe St., Chicago, Ill.
Automatic Electric Alarm Co., San Francisco, Cal.
Foote, Pierson & Co., 82 Fulton St., New York.
Gamewell Fire Alarm Telegraph Co., 19 Barclay St., N. Y.
Herzog Teleseme Co., 51 West 24th St., New York.
Magneto Electric Co., Amsterdam, N. Y.
National Autophone Co., 277 Dearborn St., Chicago, Ill.
Pearce, Frederick, 18 Rose St., New York.
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.
Star Electric Co., Binghamton, N. Y.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.

294 SIGNALS, STEAMSHIP. Systems for electrically transmitting orders from pilot house to engine room, and indicating when orders are complied with.

Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Naval Electric Co., 95 Liberty St., New York.
Novelty Electric Co., 50 N. 4th St., Philadelphia, Pa.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philadelphia.
See, Horace, 1 Broadway, New York.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

295 Street Railway. Block signals operated by current from, and in conjunction with, trolley circuits by movements of cars on line.

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
American Automatic Switch & Signal Co., 84 La Salle St., Chicago, Ill.
Electro-Mechanical Switch Co., Baltimore, Md.
Eureka Automatic Electric Signal Co., Lansford, Pa.
Hall Signal Co., 25 Broad St., New York.
International Telephone Mfg. Co., Harrison & Clinton Sts. Chicago, Ill.
Jordan, Bros., 74 Beekman St., New York.
Kinsman Block System Co., 91 Liberty St., New York.
Magneto Electric Co., Amsterdam, N. Y.
Ohio Brass Co., Mansfield, O.
Parrish Signal Co., Jackson, Mich.
Pittsburgh Switch & Signal Co., 1511-1515 Liberty Ave., Pittsburg, Pa.
Pneumatic Signal Co., Rochester, N. Y.
Taylor Signal Co., 1738-1756 Elmwood Ave., Buffalo, N. Y.
Union Switch & Signal Co., Swissvale, Pa.
United States Electric Signal Co., Watertown, Mass.
Williamson & Co., Allegheny, Pa.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

296 SIGNS, ILLUMINATED, ELECTRIC. Advertising signs consisting of groups of incandescent lamps arranged in designs.

A. B. Electric Co., St. Louis, Mo.
American Reflector & Lighting Co., 2018 Van Buren St., Chicago, Ill.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Brilliant Sign Co., 85 Washington St., Chicago, Ill.
Burger, A., 39 East 8th St., New York.
Chase Electric Sign Co., Franklin & Washington Sts., Chicago, Ill.
Colonial Sign Co., Akron, O.
Connell, Wm., Boyce, Pa.
Doty, C. E., Chicago, Ill.
Eckl, Sign Works, Milwaukee, Wis.
Edison Decorative & Miniature Lamp Dept., Harrison, N. J.
Elblight Co. of America, 114 W. 32d St., New York.
Electric Motor & Equipment Co., 13 Beaver St., Newark, N. J.
Electrical Advertising Co., Worcester, Mass.

SIGNS, ELECTRIC, continued.

Empire Electric Sign Co., 107 W. 29th St., New York.
Federal Electric Co., 76 Market St., Chicago, Ill.
Garton, W. R., Co., 118 to 132 W. Jackson Blvd., Chicago, Ill.
Goetz, B., Mfg. Co., 251 Third Ave., New York.
Goltz Engineering Co., 127 Fulton St., Chicago, Ill.
Haller Machine Co., 127 Fulton St., Chicago, Ill.
Heinemann, George, & Co., 737 Girard Ave., Philadelphia, Pa.
Hughes, Thomas, 51 East 8th St., New York.
Hunter Illuminated Car Sign Co., Cincinnati, Ohio.
Marx Zero Sign Works, 160 Superior St., Chicago, Ill.
Michigan Electric Co., Detroit, Mich.
Modern Electric Co., Burlington, Iowa.
Norden-Bittner Electric Co., 1402 Broadway, New York.
Opal Sign Co., 344 Broome St., New York.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Prismatic Electric Sign Co., Syracuse, N. Y.
Rawson & Evans, 151-153 W. Washington St., Chicago, Ill.
Tripp & Co., 111 Fifth Ave., Chicago, Ill.
Universal Stage Lighting Co., 1393 Broadway, New York.
Western Reflector Co., 315 Lake St., Chicago, Ill.
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

297 **SMOOTHING IRONS, ELECTRIC.**—See 174, Heating and Cooking Apparatus, Electric.

298 **SPRINGS FOR ELECTRICAL PURPOSES.**

American Steel & Wire Co., The Rookery, Chicago, Ill.
Barnes, Wallace, Co., Bristol, Conn.
Cary Springs Works, 240 W. 29th St., New York.
Manross, F. N., Forestville, Conn.
Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y.
Raymond Mfg. Co., Corry, Pa.

299 **SOCKETS, INCANDESCENT LAMP.** Supporting holders for receiving bases of incandescent lamps, the mere insertion of which makes supply connections for the lamps.

American Electrical Supply Co., 40 S. Howard St., Baltimore.
Balsley & Bryner, Connellsville, Pa.
Bernstein Electric Mfg. Co., Gardner & Roxbury Sts., Boston.
Brunt, G. F., Porcelain Works, East Liverpool, Ohio.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Burdett-Rowntree Mfg. Co., 85 W. Jackson St., Chicago, Ill.
Electric Porcelain & Mfg. Co., Trenton, N. J.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Federal Electric Co., 76 Market St., Chicago, Ill.
Flagg, I. J., Clinton, Mass.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
General Electric Co., Schenectady, N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Imperial Electric Lamp Co., 75 Fulton St., New York.
International Telephone Co., Harrison & Clinton Sts., Chicago. Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johns, H. W., Manville. Co., 100 William St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Matthews, W. N., & Bro., 600 Carleton Bldg., St. Louis, Mo.

SOCKETS, INCANDESCENT LAMP, continued.

New England Electric Mfg. Co., West Somerville, Mass.
Ohio Electric Works, Cleveland, Ohio.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.
Pass & Seymour, Inc., Solvay, N. Y.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Peru Electric Mfg. Co., Peru, Ind.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Tri-Light Electric Co., Birmingham, Ala.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Westinghouse Machine Co., Pittsburg, Pa.
Yost Electric Mfg. Co., Toledo, O.

300 **Miniature Lamp.** Adapted for ornamental and special miniature incandescent lamps.

Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Denison, L. S., & Co., Youngstown, Ohio.
Fensterer & Ruhe, 47 Murray St., New York.
General Electric Co., Schenectady, N. Y.
McCandless, H. W., & Co., 67 Park Place, New York.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.

301 **SOLDERING IRONS, ELECTRIC.**—See 174, Heating and Cooking Apparatus, Electric.

302 **SPARK ARRESTERS, ARC, LAMP.** For preventing escape of sparks and particles of heated carbon from arc lamp globes.

Brady, Thos. H., 351 Main St., New Britain, Conn.
Cook, F. B., 240 Lake St., Chicago, Ill.
Diamond Spark Arrester Co., South Bend, Ind.
Fort Wayne Electric Works, Fort Wayne, Ind.
K. & W. Co., Pittsfield, Mass.
South Bend Spark Arrester Co., South Bend, Ind.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Thompson-Bonney Co., 45-47 York St., Brooklyn, N. Y.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.

303 **SPARK COILS.** Single coils of wire upon laminated iron cores for producing heavy self-inductive sparks in gas ignition.

American Coil Co., West Somerville, Mass.
American Electrical Works, Providence, R. I.
Ansonia Electrical Co., Ansonia, Conn.
Apfel Murdoch Co., 82 Lake St., Chicago, Ill.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bradley, E. C., & Co., Rochester, N. Y.
Bunnell, J. H., & Co., 20 Park Place, New York.
Capital Electric Engineering Co., Lansing, Mich.
Columbus Storage Battery Co., 128 W. Spring St., Columbus, O.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Crescent Machine Co., Detroit, Mich.
Crest Mfg. Co., Cambridgeport, Mass.
Dayton Electrical Mfg. Co., Dayton, Ohio.
Dow Portable Electric Co., 218 Tremont St., Boston, Mass.
Edison Mfg. Co., 83 Chambers St., New York.

SPARK COILS, continued.

Edwards & Co., 405-409 E. 144th St., New York.
Electric Supply & Engineering Co., Lansing, Mich.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Eureka Mfg. Co., St. Paul, Minn.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Gordon Battery Co., 439 E. 144th St., New York.
Hanford, George S., 1018 American Trust Bldg., Cleveland, O.
Heinze Electric Co., Lowell, Mass.
Holtzer-Cabot Electric Co., Brookline, Mass.
Hydra Battery Co., 70 Reade St., New York.
International Brass & Electric Co., 76 Beekman St., New York.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Jones, J., & Son, 64 Cortlandt St., New York.
Lancaster, Jas., H., Co., 114 Liberty St., New York.
McDermid Mfg. Co., 118 West Jackson Blvd., Chicago, Ill.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Miller-Knoblock Electric Mfg. Co., South Bend, Ind.
Modern Electric Co., Burlington, Iowa.
Morgan Motor Co., 55 Furman St., Brooklyn, N. Y.
Mueller, Herman C., 401 Florida St., Milwaukee, Wis.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
Noxon, C. P., Lee, Syracuse, N. Y.
Nungesser Electric Battery Co., 27-33 King St., Cleveland, O.
Ohio Electric Works, Cleveland, Ohio.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Remy Electric Co., Anderson, Ind.
Ritchie, E. S., & Sons, Brookline, Mass.
Ruprecht Electrical Co., 769 Cedar Ave., Cleveland, O.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Shug Electric Mfg. Co., Detroit, Mich.
Splitdorf, C. E., 17 Vandewater St., New York.
Sterling Electric Motor Co., Dayton, Ohio.
Thornton Electric Works, 3 E. 14th St., New York.
Torbenson Gear, Inc., Bloomfield, N. J.
Varley Duplex Magnet Co., Inc., Providence, R. I.
Van Nort Mfg. Co., St. Louis, Mo.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.
Williams, E. Q., 316 E. Water St., Syracuse, N. Y.
Witherbee Igniter Co., 25 W. 33d St., New York.
York Electric & Mach. Co., York, Pa.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

304 **SPLICING CLAMPS, WIRE.**—See 106, Construction Tools, Lineman's.

305 **SPRING JACKS AND CUT-OUTS.**—See 324, Telegraph Instruments and Apparatus.

306 **STATIC MACHINES.** Machines for development of static electricity by friction or electro-static induction.
Birtman, C. F., & Co., 45 Randolph St., Chicago, Ill.
Electro-Medical Mfg. Co., 59th & Wallace Sts., Chicago, Ill.
Harvard Electric Co., 226 So. Clinton St., Chicago, Ill.
Heinze Electric Co., Lowell, Mass.
Kidder, Jerome Mfg. Co., 820 Broadway, New York.

STATIC MACHINES, continued.

Knott, L. E., Apparatus Co., 14 Ashburton Place, Boston, Mass.
McElliott & Becker, 35 State St., Chicago, Ill.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Sorensen Mfg. Co., Ravenna, Ohio.
Swett & Lewis Co., 18 Boyleston St., Boston, Mass.
Van Houten & Tenbroeck Co., 300 Fourth Ave., New York.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Wagner, R. V., & Co., 308 Dearborn St., Chicago, Ill.
Waite & Bartlett Mfg. Co., 217 E. 23d St., New York.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

307 STORAGE BATTERIES.—See 28, Batteries, Storage.

308 SWITCHBOARDS, LIGHT AND POWER. Having generator and feeder panels equipped with switches and instruments for complete control of generation and distribution of current.

Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.
Anderson, Albert & J. M., Mfg. Co., 289 A. St., Boston, Mass.
Andrae, Julius, & Sons, Co., Milwaukee, Wis.
Atkinson, J. M., Co., 2427 Calumet Ave., Chicago, Ill.
Banner Electric Co., Bane & Walnut Sts., Youngstown, Ohio
Benton, Thomas P., & Son, 200 S. Front St., La Crosse, Wis.
Bernard, E. G., Co., 450 Fulton St., Troy, N. Y.
Berthold Electric Co., 856 N. Central Park Ave., Chicago, Ill.
Bissel, F., Co., 226-230 Huron St., Toledo, O.
Bossert Electric Construction Co., Capital Ave., & York St., Utica, N. Y.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bullock Electric Mfg. Co., Cincinnati, O.
C. & C. Electric Co., 143 Liberty St., New York.
Camden & Underwood, Parkersburg, W. Va.
Century Telephone Construction Co., Cleveland, Ohio.
Chase-Shawmut Co., Newburyport, Mass.
Clark, Burris Mfg. Co., 65 S. Canal St., Chicago, Ill.
Cleveland Switchboard & Electric Mfg. Co., 14 Middle St., Cleveland, O.
Commercial Electric Co., Indianapolis, Ind.
Condit, S. B. Jr., & Co., 63 Oliver St., Boston, Mass.
Crouse Hinds Electric Co., Syracuse, N. Y.
Eagle Electric Works, Peoria, Ill.
Electric Railway Switch & Supply Co., Springfield, Mass.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Erner Electric Co., 62 Public Square, Cleveland, Ohio.
Evans, Wm. A., & Bros., Pittsburg, Pa.
Eyanson, Geo. T., Commerce and 7th Sts., Philadelphia, Pa.
Fisher Electrical Works, Detroit, Mich.
Fisher, J. J., & Co., Crafton, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Graves, W. D., Electrical & Machine Co., Cleveland, Ohio.
Hass, R., Electric & Mfg. Co., Springfield, Ill.

SWITCHBOARDS, continued.

Heinemann, George, & Co., 737 Girard Ave., Philadelphia, Pa.
Hewitt & Warden, Newburgh, N. Y.
Hill, W. S., Electric Co., New Bedford, Mass.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johnson & Morton, Utica, N. Y.
Jones, J., & Son, 64 Cortlandt St., New York.
Knowles, C. S., 7 Arch St., Boston, Mass.
Krantz, H. Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Kurz & Root, Appleton, Wis.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
La Roche, F. A. Co., 652 Hudson St., New York.
Lindsey, H. E., & Co., Electrical Supply Co., 917 Market St., St. Louis, Mo.
Linton, G. E., & Co., Worcester, Mass.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
McCarthy Bros. & Ford, Buffalo, N. Y.
McNamara Bros., Fair Haven, Conn.
Martin Electric Co., 32 Vesey St., New York.
Metropolitan Switchboard Co., 227 W. 29th St., New York.
Michigan Electric Co., Detroit, Mich.
Minnesota Electric Co., Minneapolis, Minn.
Modern Electric Co., Burlington, Iowa.
Nailler, R. F., Akron, Ohio.
Newgard, Henry, & Co., 87 Fifth Ave., Chicago, Ill.
New York Switchboard Mfg. Co., 516 W. 36th St., New York.
Northern Electrical Mfg. Co., Madison, Wis.
Northern Engineering Co., 95 Liberty St., New York.
Overbaugh & Ayres Mfg. Co., 232 S. Clinton St., Chicago, Ill.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philda., Pa.
Pennsylvania Electrical & Mfg. Co., Irwin, Pa.
Peru Electric Mfg. Co., Peru, Ind.
Phoenix Electric Mfg. Co., Mansfield, Ohio.
Pittsburg Electrical & Machine Works, Pittsburg, Pa.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Quaker City Electric Co., 2036-2038 W. Lippincott St., Philadelphia, Pa.
Reading Gas & Electric Fixture Co., 133 Pearl St., Reading, Pa.
Rumsey Electric Co., Detroit, Mich.
Safety Electric Switch Co., 144 Pine St., Providence, R. I.
Schaefer Bros., 12 Julius St., Chicago, Ill.
Schoenman Electric Mfg. Co., Allegheny, Pa.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Sheehan, W. M., & Co., 136 Liberty St., New York.
Sipp Electric & Machine Co., Paterson, N. J.
Springfield Electrical Mfg. Co., Springfield, Mass.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sterling Electric Co., Lafayette, Ind.
Sturtevant, B. F. Co., Jamaica Plain, Mass.
Supply Mfg. Co., Pittsburg, Pa.
Telephone Mfg. Co., Sumter, S. C.
Tower-Binford Electric & Mfg. Co., 721 E. Main St., Richmond, Va.
Triumph Electric Co., 610 Baymiller St., Cincinnati, Ohio.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Walker Electric Co., 2318-2338 Noble St., Philadelphia, Pa.
Western Electric Co., 259 So. Clinton St., Chicago, Ill.

SWITCHBOARDS, continued.

Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Weston, Wm. H., & Co., 1303 Buttonwood St., Philadelphia, Pa.
White, H. P., Co., Philadelphia, Pa.
Wurdack, William, St. Louis, Mo.
York Electric & Machine Co., York, Pa.
Zimdars & Hunt, 52 Grove St., New York.

309 **Telephone.** Multiple trunking switchboards, equipped with annunciator and call apparatus, for accommodation of large numbers of subscribers.

American Electric Telephone Co., 38 W. Jackson Blvd., Chicago, Ill.
American Machine Telephone Co., Piqua, Ohio.
Automatic Electric Co., Van Buren & Morgan Sts., Chicago, Ill.
Central Telephone & Electric Co., St. Louis, Mo.
Century Telephone Construction Co., Cleveland, Ohio.
Chicago Electric Mfg. Co., 60 W. Van Buren St., Chicago, Ill.
Chicago Telephone Supply Co., Elkhart, Ind.
Clark Automatic Telephone Switchboard Co., Providence, R. I.
Connecticut Telephone & Electric Co., Meriden, Conn.
Couch, S. H., Co., 156 Pearl St., Boston, Mass.
Couch & Seeley Co., 26 Binford St., Boston, Mass.
De Veau Telephone Mfg. Co., 27 Rose St., New York.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Electrical Engineering Co., Minneapolis, Minn.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Ericsson Telephone Co., 296 Broadway, New York.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
Faller Automatic Telephone Exchange, Union Square, New York.
Farr Telephone & Construction Supply Co., 118 W. Jackson Blvd., Chicago, Ill.
Fisk, H. M., Mfg. Co., Wheaton, Ill.
Fisk-Newhall Telephone Mfg. Co., Chicago, Ill.
Garl Electric Co., Akron, O.
Gilliland Telephone & Supply Co., Adrian, Mich.
Globe Automatic Telephone Co., 135-155 W. Jackson St., Chicago, Ill.
Holtzer-Cabot Electric Co., Brookline, Mass.
International Telephone Mfg. Co., Harrison & Clinton Sts., Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Jenkins Electric Co., York, Pa.
Kellogg Switchboard & Supply Co., 231 Green St., Chicago.
Keystone Electric Telephone Co., Pittsburg, Pa.
Kokomo Telephone & Electric Mfg. Co., Kokomo, Ind.
Kusel, D. A., Telephone & Electric Mfg. Co., St. Louis, Mo.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Minnesota Electric Co., Minneapolis, Minn.
Mississippi Telephone Co., Hazelhurst, Miss.
Modern Telephone Co., Indianapolis, Ind.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Novelty Electric Co., 54 N. 4th St., Philadelphia, Pa.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philda., Pa.

SWITCHBOARDS, continued.

Peerless Electric Telephone Co., Rio, Wis.
Russell-Tomlinson Electric Co., Danbury, Conn.
Schmidt, Lambert, Telephone Mfg. Co., Weehawken, N. J.
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.
Sioux City Brass Works, Sioux City, Ia.
Standard Telephone & Electric Co., Madison, Wis.
Sterling Electric Co., Lafayette, Ind.
Stoddard Telephone Construction Co., Monroe, Mich.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.
Strowger Automatic Telephone Exchange, The Rookery, Chicago, Ill.
Swedish-American Telephone Co., 88 W. Jackson Blvd., Chicago, Ill.
Sumter Telephone Mfg. Co., Sumter, N. C.
Telephone Mfg. Co., Sumter, N. C.
Union Switchboard Co., Erie, Pa.
United States Automatic Telephone Co., 116 Nassau St., New York.
Utica Fire Alarm Telegraph Co., Utica, N. Y.
Viaduct Mfg. Co., Baltimore, Md.
Vought-Berger Co., La Crosse, Wis.
Western Telephone Mfg. Co., 75 W. Jackson Blvd., Chicago, Ill.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.

310 **SWITCHES, ELECTRIC.** Mechanical devices for opening and closing electric circuits.

310A **Ammeter.** See 329, Voltmeter Switches.

311 **Clock.**—See 90, Clock Switches.

312 **Door, Automatic.** Controlling electric lights by opening of doors.

Cutter Electrical & Mfg. Co., 1728 Spring Garden St., Philadelphia, Pa.
Edwards & Co., 405-409 E. 144th St., New York.
Hart Mfg. Co., 302 Asylum St., Hartford, Conn.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.

313 **Fixture or Chandelier.** Of special shapes for use in fixtures.

Dale Co., Ninth Ave. & 13th St., New York.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Mitchell-Vance Co., 24th St., & 10th Ave., New York.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

314 **Flush, Push Button, or Snap.** Arranged for insertion into walls flush with surface.

Austin, M. B., & Co., 56 W. Van Buren St., Chicago, Ill.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Cutter Electrical & Mfg. Co., 1728 Spring Garden St., Philadelphia, Pa.
Dale Co., Ninth Ave. & 13th St., New York.
Flint & Lomax Electric & Mfg. Co., Denver, Colo.
General Electric Co., Schenectady, N. Y.

SWITCHES, FLUSH, ETC., continued.

General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Hart & Hegeman Mfg. Co., Hartford, Conn.
Hart Mfg. Co., 302 Asylum St., Hartford, Conn.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philda., Pa.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Platt, O. S., Mfg. Co., Bridgeport, Conn.
Stanley Electric Mfg. Co., Pittsfield, Mass.

315 **High Voltage.** Special non-arcing, wide break for high potentials.

Condit, S. B. Jr., & Co., 63 Oliver St., Boston, Mass.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Helios-Upton Co., Peabody, Mass.
Hill, W. S., Electric Co., New Bedford, Mass.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Safety Electric Switch Co., 144 Pine St., Providence, R. I.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

316 **Knife.** Unencased throw switches used on switchboards.

Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.
Akron Electrical Mfg. Co., Akron, O.
American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
Anderson, Albert & J. M., Mfg. Co., 289 A. Street, Boston, Mass.
Banner Electric Co., Bane & Walnut Sts., Youngstown, Ohio.
Barkelew Electric Mfg. Co., Middletown, O.
Beck Electric Co., St. Louis, Mo.
Bossert Electric Construction Co., Capital Ave. & York St., Utica, N. Y.
Boston Electric Co., 29 Harrison Ave., Extension, Boston.
Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Chase-Shawmut Co., Newburyport, Mass.
Cleveland Switchboard & Elec. Mfg. Co., 14 Middle St., Cleveland, O.
Colonial Mfg. Co., Syracuse, N. Y.
Cornwell, R. M., Co., Syracuse, N. Y.
Crouse-Hinds Electric Co., Syracuse, N. Y.
Davis, M., & Son, Salem, Ohio.
Electrical Material Co., 221 N. Calvert St., Baltimore, Md.
Electric Controller & Supply Co., Cleveland, O.
Electric Railway Switch & Supply Co., Springfield, Mass.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Erner Electric Co., 62 Public Square, Cleveland, O.
Eureka Tempered Copper Works, North East, Pa.
Evans, Wm. A., & Bros., Pittsburg, Pa.
Eyanson, Geo. F., Commerce and 7th Sts., Philadelphia, Pa.
Fahnestock-Transmitter Co., 74 Cortlandt St., New York.
Falk Co., Milwaukee, Wis.
Fisher, J. J., & Co., Crafton, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Fort Wayne Electric Works, Fort Wayne, Ind.
Freeman, E. H., Rochester, N. Y.

SWITCHES, KNIFE, continued.

Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Gilmore Electric Co., 625 First St., Boston, Mass.
Graves, W. D., Electrical & Machine Co., 20 Michigan St., Cleveland, O.
Helios-Upton Co., Peabody, Mass.
Hill, W. S., Electric Co., New Bedford, Mass.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Johnson & Morton, Utica, N. Y.
Krantz, H. Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
La Roche, F. A. Co., 652 Hudson St., New York.
Leonard Bundy Co., Champlain St., Cleveland, O.
Lindsey, H. E., Electrical Supply Co., 917 Market St., St. Louis, Mo.
Linton, G. E., & Co., Worcester, Mass.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
McCarthy Bros. & Ford, Buffalo, N. Y.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Metropolitan Switchboard Co., 227 W. 29th St., New York.
New York Switchboard & Mfg. Co., 516 W. 36th St., New York.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.
Pennsylvania Electrical & Mfg. Co., Irwin, Pa.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Peru Electric Mfg. Co., Peru, Ind.
Pittsburg Electrical & Machine Works, Pittsburg, Pa.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Reading Gas & Electric Fixture Co., 133 Pearl St., Reading, Pa.
Safety Electric Switch Co., 144 Pine St., Providence, R. I.
Springfield Electrical Mfg. Co., Springfield, Mass.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Sterion Copper, Brass & Bronze Co., 63 N. Ashland Ave., Chicago, Ill.
Tower-Binford Electric & Mfg. Co., 721 East Main St., Richmond, Va.
Trumbull Electric Co., Plainville, Conn.
Walker Electric Co., 2318-2338 Noble St., Philadelphia, Pa.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Weston, Wm. H., & Co., 1303 Buttonwood St., Philadelphia.
White, H. P., Co., Philadelphia, Pa.
York Electric & Mach. Co., York, Pa.
Zimdars & Hunt, 52 Grove St., New York.

316A **Self-Closing.** Electrically operated switches, controlled from a distance.

Anderson, Albert, & J. M., Mfg. Co., 289 A St., Boston, Mass.
Cutler-Hammer Mfg. Co., 12th St. & St. Paul Ave., Milwaukee, Wis.

317 **Snap.** Rotating contact makers, non-arcing at low potentials.

Bryant Electric Co., 1421 State St., Bridgeport, Conn.
Flint-Lomax Electric & Mfg. Co., Denver, Col.

SWITCHES, SNAP, continued.

General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Hart Mfg. Co., 302 Asylum St., Hartford, Conn.
Krantz, H., Mfg. Co., 160-166 7th St., Brooklyn, N. Y.
Marshall-Sanders Co., 301 Congress St., Boston, Mass.
Metropolitan Switchboard Co., 227 W. 29th St., New York.
New England Elec. Mfg. Co., W. Somerville, Mass.
Paiste, H. T., Co., 3101 Ludlow St., Philadelphia, Pa.
Pass & Seymour, Inc., Solvay, N. Y.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport.
Platt, O. S., Mfg. Co., Bridgeport, Conn.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Sechrist, Albert, Mfg. Co., Denver, Col.
Stanley Electric Co., Pittsfield, Mass.

318 **Storage Battery.** Motor driven, for cutting batteries in or out to adjust total voltage.

Anderson, Albert & J. M., Mfg. Co., 289 A St., Boston, Mass.
Electro-Dynamic Co., 224 Ionic St., Philadelphia, Pa.
Flint-Lomax Electric & Mfg Co., Denver, Col.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Helios-Upton Co., Peabody, Mass.
Hill, W. S., Electric Co., New Bedford, Mass.
La Roche, F. A., Co., 652 Hudson St., New York.
Reading Gas & Electric Fixture Co., 133 Pearl St., Reading.

319 **Track, Automatic.** For making contacts automatically on passage of trains.

American Automatic Switch Co., New Haven, Conn.
American Electric Switch Co., Pittsburg, Pa.
Cheatham Electric Switching Device Co., Louisville, Ky.
Detroit Automatic Switch Co., Mt. Clemens, Mich.
New York Switch & Crossing Co., Hoboken, N. J.
Pittsburgh Switch & Signal Co., 1511-1515 Liberty Ave., Pittsburg, Pa.

320 **Voltmeter.** For connecting a single voltmeter to any one of several circuits.

Anderson, Albert, & J. M., Mfg. Co., 289 A St., Boston, Mass.
Clark Burris Mfg. Co., 65 S. Canal St., Chicago, Ill.
Crouse-Hinds Electric Co., Syracuse, N. Y.
Cutter, Geo., Co., Union and Fulton Sts., Chicago, Ill.
Eureka Tempered Copper Works, North East, Pa.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Lang, J., Electric Co., 176-178 E. Indiana St., Chicago, Ill.
La Roche, F. A., Co., 652 Hudson St., New York.
Mabbs, J. W., Chicago, Ill.
Metropolitan Switchboard Co., 227 W. 29th St., New York.
Pringle, W. T., 112 N. 12th St., Philadelphia, Pa.
Reading Gas & Electric Fixture Co., 133 Pearl St., Reading.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Walker Electric Co., 2318-2338 Noble St., Philadelphia, Pa.

321 **TABLET BOARDS.**—See 242, Panel Boards.

322 **TABULATORS, ELECTRIC.** Devices for calculations and tabulations operated electrically.

Western Electric Co., 259 S. Clinton St., Chicago, Ill.

323 **TAPE, INSULATING.** For covering joints and bare portions of wires and conductors.

American Electrical Works, Providence, R. I.
Brixey, W. R., 203 Broadway, New York.
Cleveland Rubber Works, Cleveland, Ohio.
Clifton Manufacturing Co., 220 Devonshire St., Boston, Mass.
Consumers Rubber Co., 199 Bank St., Cleveland, O.
Diamond Rubber Co., Akron, O.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Garton, W. R., Co., 118-132 W. Jackson Blvd., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Goodrich, B. F., Co., Akron, Ohio.
India Rubber Co., Akron, Ohio.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Knowles, C. S., 7 Arch St., Boston, Mass.
Massachusetts Chemical Co., 170 Summer St., Boston, Mass.
Mica Insulator Co., 218 Water St., New York.
Morgan & Wright, 331 W. Lake St., Chicago, Ill.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
New York Insulated Wire Co., 118 Liberty St., New York.
Okonite Co., Ltd., 253 Broadway, New York.
Revere Rubber Co., 77 Bedford St., Boston, Mass.
Standard Paint Co., 100 William St., New York.
Straus Rubber & Tire Co., 351 E. 61st St., New York.

324 **TELEGRAPH INSTRUMENTS AND APPARATUS.** Apparatus for transmission of intelligence by means of the Morse code, including keys, sounders, relays, etc.

Amber Electric Mfg. Co., 60-62 W. Monroe St., Chicago, Ill.
Bunnell, J. H., & Co., 20 Park Place, New York.
Bunnell Telegraphic & Electric Co., 110 Beekman St., N. Y.
Burry, John, 654 Hudson St., New York.
Clark, Thos. E., Wireless Telegraph & Telephone Co., Detroit, Mich.
Couch & Seeley Co., 28 Binford St., Boston, Mass.
Edwards & Co., 405-409 E. 144th St., New York.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Foote, Pierson & Co., 82 Fulton St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers' & Inventors' Electric Co., 84 Nassau St., N. Y.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Omnigraph Mfg. Co., 39 Cortlandt St., New York.
Parrish Signal Co., Jackson, Mich.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philda., Pa.
Pearce, Fredk., 18 Rose St., New York.
Prentiss Clock Improvement Co., 49 Dey St., New York.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Warner Electric Co., Muncie, Ind.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

324A **Wireless.**

Clark, Thos. E., Wireless Telegraph & Telephone Co., Detroit, Mich.

325 **TELEPHONE BOOTHS.**—See 44, Booths, Telephone.

326 **TELEPHONE BOXES, AND BACKBOARDS.**—See 48, Boxes, Telephone.

327 **TELEPHONE DROPS.**—See 309, Switchboards, Telephone.

328 **TELEPHONES.** Apparatus for transmissions of articulate speech, including transmitters, receivers, etc.

Ackerman, Chas. N., & Co., 287 Elm St., Chicago, Ill.
Acme Electric Co., 199 S. Canal St., Chicago, Ill.
Adam, Frank, Electric Co., 904 Pine St., St. Louis, Mo.
Allen-Hussey Co., Jackson Blvd. and Clinton St., Chicago, Ill
Altman & Co., 69 Dearborn St., Chicago, Ill.
American Electric Telephone Co., 38 W. Jackson Blvd., Chicago, Ill.
American Hard Rubber Co., 9 Mercer St., New York.
American Machine Telephone Co., Piqua, O.
American Push Button Telephone Co., 463 5th Ave., New York.
Andrae, Julius, & Sons Co., Milwaukee, Wis.
Atwater-Kent Mfg. Works, 112 N. 6th St., Philadelphia, Pa.
Austin, M. B., & Co., 56 W. Van Buren St., Chicago, Ill.
Automatic Electric Co., Chicago, Ill.
Baird Mfg. Co., 24 Michigan St., Chicago, Ill.
Barr, W. J., 131 Viaduct St., Cleveland, O.
Bell Telephone Co., Philadelphia, Pa.
Black River Telephone Co., Lorain, O.
Briggs Electric Co., Cleveland, O.
Bright Telephone Mfg. Co., 104 N. 6th St., Philadelphia, Pa.
Burnett's Model & Electric Works, Ludlow, Ky.
Central Telephone & Electric Co., 909 Market St., St. Louis.
Century Telephone Construction Co., Cleveland, O.
Chicago Telephone Co., Washington & Franklin Sts., Chicago, Ill.
Chicago Telephone Supply Co., Elkhart, Ind.
Clark Automatic Switchboard Co., Providence, R. I.
Cole & Son, Rockford, Ill.
Connecticut Telephone & Electric Co., Meriden, Conn.
Couch, S. H., Co., 156 Pearl St., Boston, Mass.
Couch & Seeley Co., 26 Binford St., Boston, Mass.
Country Home Telephone Co., 215 So. Clinton St., Chicago, Ill.
Crider, S. S., Sterling, Ill.
De Veau Telephone Mfg. Co., 27 Rose St., New York.
Dorlon, Philip S., Troy, N. Y.
Durham Telephone Mfg. Co., Durham, N. C.
Eastern Telephone Mfg. Co., West Chester, Pa.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Electrical Engineering Co., Minneapolis, Minn.
Electrical Material Co., 167 Van Buren St., Chicago, Ill.
Electrical Supply & Telephone Co., 1330 Arch St., Philadelphia, Pa.
Electrose Manufacturing Co., 127 N. 10th St., Brooklyn, N. Y.
Elgin Telephone Co., Elgin, Ill.
Elliott Telephone Co., Indianapolis, Ind.
Ericsson Telephone Co., 296 Broadway, New York.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
Fahnestock Transmitter Co., 74 Cortlandt St., New York.

TELEPHONES, continued.

Farr Telephone & Construction Supply Co., 118 W. Jackson Blvd, Chicago, Ill.
Fierfelder Telephone Co., Cincinnati, O.
Fisk-Newhall Telephone Mfg. Co., Chicago, Ill.
Fitzsimmons Telephone Mfg. Co., Cincinnati, O.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Garl Electric Co., Akron, O.
Garrett, Miller & Co., N. E. cor. 4th and Orange Sts., Wilmington, Del.
Gilliland Electric Co., Adrian, Mich.
Gilliland Telephone & Supply Co., Adrian, Mich.
Globe Automatic Telephone Co., 153-155 W. Jackson St., Chicago, Ill.
Globe Telephone Co., 620 Filbert St., Philadelphia, Pa.
Grand Rapids Electric Co., Grand Rapids, Mich.
Green Telephone & Electric Mfg. Co., Milwaukee, Wis.
Harrison Construction Co., 505 Elmer Ct., Cincinnati, O.
Hipwell Mfg. Co., Allegheny, Pa.
Hodge-Walsh Electrical Engineering Co., Kansas City, Mo.
Holtzer-Cabot Electric Co., Brookline, Mass.
Hughes Telephone Co., 123 Hanover St., Baltimore, Md.
International Telephone Mfg. Co., Harrison and Clinton Sts., Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Jenkins Electric Co., York Pa.
Kansas City Telephone Mfg. Co., Kansas City, Mo.
Kellogg Switchboard & Supply Co., 231 Green St., Chicago.
Kelley & Burton Electric Co., 328 West 4th St., Cincinnati, O.
Keystone Electric Telephone Co., Pittsburg, Pa.
Kokomo Telephone & Electric Mfg. Co., Kokomo, Ind.
Kusel, D. A., Telephone & Electric Mfg. Co., St. Louis, Mo.
Maryland Telephone Co., Hagerstown, Md.
Maryland Telephone Mfg. Co., Baltimore, Md.
Mason Telephone Pay Station Co., Ludington, Mich.
Metropolitan Telephone & Electric Co., 610 Wilson Ave., Chicago, Ill.
Mianus Electric Co., Mianus, Conn.
Minnesota Electric Co., Minneapolis, Minn.
Modern Electric Co., Burlington, Iowa.
Modern Telephone Co., Indianapolis, Ind.
Monarch Telephone Mfg. Co., 12 S. Clinton St., Chicago, Ill.
Moore Telephone Mfg. Co., Caro, Mich.
Moran, O., New York.
Murdock & Co., Chelsea, Mass.
Mutual Electric & Novelty Mfg. Co., 80 Cortlandt St., N. Y.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Novelty Electric Co., 54 N. 4th St., Philadelphia, Pa.
Pacific Electric Co., 127 Main St., La Crosse, Wis.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philda., Pa.
Payne, George F., & Co., Philadelphia, Pa.
Peerless Electric Telephone Co., Rio, Wis.
Pennsylvania Electric Co., Marietta, Pa.
Pennsylvania Electrical Co., Ltd., Corry, Pa.
Plummer, Ham & Richardson, 619 Main St., Worcester, Mass.
Pullen, Leon W., Electrical Co., 618 Chestnut St., Philadelphia, Pa. *See adv. page 72.*
Randall-Loudon Electrical Co., Memphis, Tenn.
Rawson Electric Co., Elyria, O.

TELEPHONES, continued.

R. I. Telephone & Electric Co., 24 Calender St., Providence, R. I.
Russell-Tomlinson Electric Co., Danbury, Conn.
Schmidt, Lambert, Telephone Mfg. Co., Weehawken, N. J.
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.
Simplex Interior Telephone Co., Cincinnati, O.
Spencer Electrical Co., 163 Greenwich St., New York.
Standard Telephone & Electric Co., Madison, Wis.
Sterling Electric Co., Lafayette, Ind.
Stoddard Telephone Construction Co., Monroe, Mich.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.
Strowger Automatic Telephone Exchange, The Rookery, Chicago, Ill.
Sumter Telephone Mfg. Co., Sumter, S. C.
Superior Telephone Mfg. Co., Trenton, Mo.
Swedish-American Telephone Co., 88 W. Jackson Blvd., Chicago, Ill.
Telephone Mfg. Co., Sumter, S. C.
Tucker Electrical Construction Co., 35 S. William St., N. Y.
Tucker, Frank S., & Co., Boston, Mass.
United States Automatic Telephone Co., 116 Nassau St., N. Y.
United States Electric Mfg. Co., Butler, Pa.
Viaduct Mfg. Co., Baltimore, Md.
Varney Electrical Supply Co., Indianapolis, Ind.
Vought-Berger Co., La Crosse, Wis.
Wakeman, L. B., 39-43 W. Washington St., Chicago, Ill.
Wentworth & Blake, 19 High St., Boston, Mass.
West Electric Co., Mt. Vernon, N. Y.
Western Telephone Mfg. Co., 75 W. Jackson Blvd., Chicago.
Wheeler, M. B., Electric Co., Grand Rapids, Mich.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.
Williams-Abbott Electric Co., Cleveland, O.
Williams Electric Co., Cleveland, O.
Yurgae Signalphone Mfg. Co., Milwaukee, Wis.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

329 TELEPHONES, INTERIOR, INTERCOMMUNICATING. Arranged to permit intercommunication between numbers of 'phones in buildings, factories, etc., without requiring services of switchboard operators.

Altman & Co., 69 Dearborn St., Chicago, Ill.
American Electrical Works, Providence, R. I.
Atwater-Kent Mfg. Works, 112 N. 6th St., Philadelphia, Pa.
Couch & Seeley Co., 26 Binford St., Boston, Mass.
Electrical Appliance Co., 132-134 Longworth St., Cincinnati, O.
Electric Gas Lighting Co., Purchase & Hartford Sts., Boston, Mass.
Ericsson Telephone Co., 69 Dearborn St., Chicago, Ill.
Eureka Electric Co., 55 W. Jackson Blvd., Chicago, Ill.
Globe Automatic Telephone Co., 153-155 W. Jackson St., Chicago, Ill.
Holtzer-Cabot Electric Co., Brookline, Mass.
International Telephone Mfg. Co., Harrison and Clinton Sts. Chicago, Ill.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Novelty Electric Co., 54 N. 4th St., Philadelphia, Pa.
Partrick, Carter & Wilkens, 1231 Callowhill St., Philda., Pa.

TELEPHONES, INTERIOR, continued.

Piedmont Electric Co., Asheville, N. C.
Schmidt, Lambert, Telephone Co., Weehawken, N. J.
Signalphone Mfg. Co., 128 Sycamore St., Milwaukee, Wis.
Spencer Electrical Co., 163 Greenwich St., New York.
Stoddard Telephone Construction Co., Monroe, Mich.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.
Sumter Telephone Mfg. Co., Sumter, S. C.
Swedish-American Telephone Co., 88 W. Jackson Blvd., Chicago, Ill.
Viaduct Mfg. Co., Baltimore, Md.
Vought-Berger Co., La Crosse, Wis.
Wakeman, L. B., 39-43 W. Washington St., Chicago, Ill.
West Electric Co., Mt. Vernon, N. Y.
Wilhelm Telephone Mfg. Co., Buffalo, N. Y.

330 **TELL-TALE FLOATS, ELECTRICAL.**—See 146, Floats, High and Low Water, Electric.

331 **TELPHERAGE SYSTEMS, ELECTRIC.** Conveyance systems operated upon aerial cables driven by electric motors taking current from the cables.

Couch & Seeley Co., 28 Binford St., Boston, Mass.
United Telpherage Co., 20 Broad St., New York.

332 **TERMINALS, TELEPHONE CABLE.**—See 67, Cable Terminals.

333 **TESTING INSTRUMENTS.** Instruments and apparatus for carrying out methods of electrical determinations of resistances, capacities, power, phase angles, etc.

Bunnell, J. H., & Co., 20 Park Place, New York.
Couch & Seeley Co., 26 Binford St., Boston, Mass.
Electric Contract Co., 202 Centre St., New York.
Empire Electrical Instrument Co., 654 Hudson St., New York.
Farr Telephone & Construction Supply Co., 118 W. Jackson Blvd., Chicago, Ill.
Foote, Pierson & Co., 82 Fulton St., New York.
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. W., 106 Sudbury St., Boston, Mass.
Holtzer-Cabot Electric Co., Brookline, Mass.
International Telephone Mfg. Co., Harrison and Clinton Sts., Chicago, Ill.
Jewell Electrical Instrument Co., 61-63 Union Park Court, Chicago, Ill.
Keystone Electrical Instrument Co., 9th St., cor. Montgomery Ave., Philadelphia, Pa.
Knott, L. E., Apparatus Co., 14 Ashburton Place, Boston, Mass.
Leeds & Northrup Co., 259 N. Broad St., Philadelphia, Pa.
Lundin Electric & Machine Co., 176 Federal St., Boston, Mass.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Manufacturers & Inventors Electric Co., 84 Nassau St., N. Y.
Myers Break Finder Co., 105 S. Warren St., Syracuse, N. Y.
North Electric Co., 149-159 St. Clair St., Cleveland, O.
Palmer Electrical Instrument Co., Philadelphia, Pa.
Pearce, Frederick, 18 Rose St., New York.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Stoddard Telephone Construction Co., Monroe, Mich.

TESTING INSTRUMENTS, continued.

Western Electric Co., 259 S. Clinton St., Chicago, Ill.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Building, Pittsburg, Pa.
Weston Electrical Instrument Co., Waverly Park, Newark, N. J.
Whitney Electrical Instrument Co., 203 Broadway, New York.
Willyoung & Gibson Co., 40 W. 13th St., New York.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

334 **TIME DETECTOR SYSTEMS, WATCHMAN'S.**—See 344, Watchman's Time Detector systems.

335 **TIME SWITCHES.**—See 90, Clock Switches.

336 **TIME SYSTEMS, ELECTRIC.** Systems of clocks whose works are moved electrically, usually consisting of an electrically wound master or controller clock and follower clocks electrically driven thereby.

American Watchman's Time Detector Co., 234 Broadway, N. Y.
Automatic Time Stamp Co., Boston, Mass.
Baird Mfg. Co., 24 Michigan St., Chicago, Ill.
Edwards & Co., 405-409 E. 144th St., New York.
Herzog Teleseme Co., 51 W. 24th St., New York.
National Self-Winding Clock Co., Bristol, Conn.
Prentiss Clock Improvement Co., 49 Dey St., New York.
Self-Winding Clock Co., Grand Ave., Brooklyn, N. Y.
Standard Electric Time Co., Waterbury, Conn.
United States Electric Clock Co., 304 Hudson St., New York.
Waltham Clock Co., Waltham, Mass.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

337 **TOOLS, LINEMAN'S CONSTRUCTION.**—See 106, Construction Tools, Lineman's.

338 **TRANSFORMERS, STATIC.** Inverted induction coils used in alternating distribution systems for raising or lowering potentials.

American Transformer Co., Newark, N. J.
Bullock Electric Mfg. Co., Cincinnati, O.
Cushman Electric Co., 253 Broadway, New York.
Diamond Meter Co., Peoria, Ill.
Elbridge Electrical Mfg. Co., Elbridge, N. Y.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Harvard Electric Co., 226 S. Clinton St., Chicago, Ill.
Inter-State Electric Co., 303-307 Magazine St., New Orleans, La.
Kuhlman Electric Co., E. High St., Elkhart, Ind.
Lakon Co., Elkhart, Ind.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago.
Moloney Electric Co., 2d and Vine Sts., St. Louis, Mo.
National Electric Co., Milwaukee, Wis.
New York & Ohio Co., Warren, O.
Pittsburg Transformer Co., Pittsburg, Pa.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Royal Electric Co., Peoria, Ill.
Standard Electric Mfg. Co., Niles, Ohio.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Victor Electric Co., 55-61 Market St., Chicago, Ill.

TRANSFORMERS, continued.

Vindex Electric Co., Spring St. Viaduct, Aurora, Ill.
Wagner Electric Mfg. Co., 2017 Locust St., St. Louis, Mo.
Warren Electric & Specialty Co., Warren, O.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

339 **TRANSMITTERS.**—See 328, Telephones.

340 **TROLLEY POLES.**—See 253, Poles, Trolley.

341 **TUBES, CROOKE'S OR GEISSLER.** Vacuum tubes of glass with platinum electrodes fused in for exhibiting luminous effects of electrical discharges. (See also 361, "X-Ray" Outfits.)

Barrio Vacuum Co., 156 E. 23d St., New York.
Foote, Pierson & Co., 82 Fulton St., New York.
Friedlander, R., & Co., Flat Iron Bldg., New York.
Green & Bauer, 33 Wells St., Hartford, Conn.
Heinze Electric Co., Lowell, Mass.
Kidder, Jerome, Mfg. Co., 820 Broadway, New York.
Lamont, G. E., San Francisco, Cal.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Swett & Lewis, 18 Boylston St., Boston, Mass.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

342 **TUBES, WIRING.** For extra insulation of wires passing through walls, partitions, etc. (See also 101, Conduits, Interior.)

Akron Insulator & Marble Co., Akron, O.
Akron Smoking Pipe Co., Mogadore, O.
American Hard Rubber Co., 9 Mercer St., New York.
American Marble & Toy Mfg. Co., Akron, O.
Bowers Mfg. Co., Mogadore, O.
Brian Pottery Co., Trenton, N. J.
Brunt, G. F., Porcelain Works, East Liverpool, O.
Canton Insulator & Clay Co., Canton, O.
Diamond Rubber Co., Akron, O.
Electric Porcelain Co., East Liverpool, O.
Flint-Lomax Electric & Mfg. Co., Denver, Col.
Johns, H. W., Manville Co., 100 William St., New York.
Mogadore Insulator Co., Mogadore, O.
National India Rubber Co., Bristol, R. I.
Pass & Seymour, Inc., Solvay, N. Y.
Peru Electric Mfg. Co., Peru, Ind.
Renim Specialty Co., 176 Federal St., Boston, Mass.
Sprague Electric Co., 527 W. 34th St., New York.
Thomas, R., & Sons Co., East Liverpool, O.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

343 **VOLTMETERS.**—See 226, Measuring Instruments.

344 **WATCHMEN'S TIME DETECTOR SYSTEMS.** Clock registers, with electrical transmission apparatus for recording watchman's visits at certain stations.

American Watchman's Time Detector Co., 234 Broadway, N. Y.
Edwards & Co., 405-409 E. 144th St., New York.
Eco Watchmans' Clock Co., Boston, Mass.
General Watchman's Time Detector Co., 49 Dey St., New York.

WATCHMEN'S TIME SYSTEMS, continued.

Herzog Teleseme Co., 51 W. 24th St., New York.
Holtzer-Cabot Electric Co., Brookline, Mass.
Imhauser, E., & Co., 206 Broadway, New York.
Prentiss Clock Improvement Co., 49 Dey St., New York.

345 **WATER-LEVEL INDICATORS.**—See 146, Floats, High and Low Water, Electrical.

346 **WATTMETERS.**—See 226, Measuring Instruments.

347 **WATTMETERS, RECORDING.**—See 265, Recording Meters.

348 **WELDING MACHINES, ELECTRIC.** Apparatus for effecting welding unions of metal by heat of electrical origin.

Standard Welding Co., Cleveland, O.
Thomson Electric Welding Co., Lynn, Mass.

349 **WHEATSTONE BRIDGES.**—See 333, Testing Instruments.

350 **WIRE GAGES.** For accurately measuring diameters of wire.

Novelty Electric Co., 50 N. 4th St., Philadelphia, Pa.
Pratt & Whitney Co., Hartford, Conn.
Starrett, L. S., Co., Athol, Mass.
Vulcan Hardware Co., Carlstadt, N. J.

351 **WIRE GUARDS.** For use at ends of cross arms to catch loosened wires.

American Electric Co., Detroit, Mich.
Amos, Charles, & Co., Detroit, Mich.
Barbee Wire & Iron Works, 44 Dearbon St., Chicago, Ill.
Darby, Edward, & Sons, 235 Arch St., Philadelphia, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Haist, A., & Co., 73 W. Washington St., Chicago, Ill.
Hamblin & Russell Mfg. Co., Worcester, Mass.
Hipwell Mfg. Co., Allegheny, Pa.
Inglis, Wm., Wire & Iron Works, Detroit, Mich.
Klemm & Co., 132 N. 5th St., Philadelphia, Pa.
Macomber, Whyte Rope Co., 21 S. Canal St., Chicago, Ill.
National Mfg. Co., Worcester, Mass.
Scott Bros. Electric Co., Detroit, Mich.
Seidler-Miner Electric Co., 207 Jefferson Ave., Detroit, Mich.
Wagor, P. R., Mfg. Co., 56 Harrison Ave., Springfield, Mass.

352 **WIRE, ALUMINUM.** For Feeders, Transmission, etc.

American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
Haeuser, August R., 163 William St., New York.
Janney, Steinmetz & Co., Philadelphia, Pa.
Pittsburgh Reduction Co., Pittsburg, Pa.

353 **Bare Copper.** For trolley wires.

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Ansonia Brass & Copper Co., 99 John St., New York.
Bridgeport Brass Co., Bridgeport, Conn.
Chicago Insulated Wire Co., 152 Lake St., Chicago, Ill.
Coe Brass Mfg. Co., Ansonia, Conn.

WIRE, COPPER, continued.

Columbus Insulated Wire & Brass Co., Columbus, O.
Empire Wire Co., 92 William St., New York. *See adv. page 72.*
Ferricup Metal Co., East Greenwich, R. I.
Hazard Mfg. Co., Wilkesbarre, Pa.
Holmes, Booth & Haydens Co., Waterbury, Conn.
Magnet Wire Co., 80 William St., New York.
National Conduit & Cable Co., 41 Park Row, New York.
Plume & Atwood Mfg. Co., Waterbury, Conn.
Roebling's, John A., Sons Co., Trenton, N. J.
Scoville Mfg. Co., Waterbury, Conn.
Seymour Mfg. Co., Seymour, Conn.
Standard Underground Cable Co., Pittsburg, Pa.
Taunton-New Bedford Copper Co., Taunton, Mass.
Waclark Wire Co., 49 Wall St., New York

354 **Fuse.** Of fusible alloy metal for protection of circuits from excessive currents.

American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
American Electrical Works, Providence, R. I.
Barbee Wire & Iron Works, Lafayette, Ind.
Chase-Shawmut Co., 390 Atlantic Ave., Boston, Mass.
Chicago Die & Elec. Co., 87 W. Lake St., Chicago, Ill.
Chicago Fuse Wire & Mfg. Co., 358 Dearborn St., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
General Incandescent Arc Light Co., 529 W. 34th St., N. Y.
Harvard Electric Co., 226 S. Clinton St., Chicago, Ill.
McIntire, C., Co., Newark, N. J.
Perkins Electric Switch Mfg. Co., 1421 State St., Bridgeport, Conn.
Scott Bros. Electric Co., Detroit, Mich.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

355 **Insulated, Annunciator and office.** For call bell, telegraph and telephone wiring.

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Ansonia Brass & Copper Co., 99 John St., New York.
Ansonia Electrical Co., Ansonia, Conn.
Bishop Gutta Percha Co., 420 E. 25th St., New York.
Bridgeport Brass Co., Bridgeport, Conn.
Chicago Insulated Wire Co., 152 Lake St., Chicago, Ill.
Empire Wire Co., 92 William St., New York. *See adv. page 72.*
Hazard Mfg. Co., Wilkesbarre, Pa.
Malin & Co., Cleveland, O.
Monarch Electric & Wire Co., 125 S. Clinton St., Chicago, Ill.
Moore, Alfred F., 200 N. 3d St., Philadelphia, Pa.
New York Insulated Wire Co., 114 Liberty St., New York.
Phillips Insulated Wire Co., Pawtucket, R. I.
Roebling's, John A., Sons Co., Trenton, N. J.
Standard Underground Cable Co., Pittsburg, Pa.
Stromberg-Carlson Telephone Mfg. Co., 80 Jackson Blvd., Chicago, Ill.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

WIRE, continued.

356 **Insulated Magnet.** For use on electro magnets, field magnets, etc.

American Electric Fuse Co., 48 W. Jackson Blvd., Chicago, Ill.
American Electrical Works, Providence, R. I.
Ansonia Brass & Copper Co., 99 John St., New York.
Ansonia Electrical Co., Ansonia, Conn.
Boker Herrmann & Co., 101 Duane St., New York.
Bradford, Kyle & Co., Plymouth, Mass.
Bridgeport Brass Co., Bridgeport, Conn.
Chicago Insulated Wire Co., 152 Lake St., Chicago, Ill.
Columbus Insulated Wire & Brass Co. Columbus, O.
Connecticut Insulating Wire Co., Ansonia, Conn.
Empire Wire Co., 92 William St., New York. *See adv. page 72.*
Hazard Mfg. Co., Wilkesbarre, Pa.
Holmes, Booth & Haydens Co., Waterbury, Conn.
McDermid Mfg. Co., 118 West Jackson Blvd., Chicago, Ill.
Magnet Wire Co., 141 Broadway, New York.
Moon Mfg. Co., 47 S. Canal St., Chicago, Ill.
Moore, Alfred F., 200 N. 3d St., Philadelphia, Pa.
New England Electrical Works, Lisbon, N. H.
Rhode Island Electric Works, Pawtucket, R. I.
Roebling's, John A., Sons Co., Trenton, N. J.
Thordarson, C. H., 153 S. Jefferson St., Chicago, Ill.

357 **Insulated, Rubber Covered.** Used in interior wiring.

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Bishop Gutta Percha Co., 420 East 25th St., New York.
Bourn Rubber Co., 49 Westfield St., Providence, R. I.
Brixey, W. R., 203 Broadway, New York.
Ferrin, F. M., 45 Arch St., Boston, Mass.
General Electric Co., Schenectady, N. Y.
Hazard Mfg. Co., Wilkesbarre, Pa.
India Rubber & Gutta Percha Insulating Co., 15 Cortlandt St., New York.
Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
Moore, Alfred F., 200 N. 3d St., Philadelphia, Pa.
National India Rubber Co., Bristol, R. I.
New York Insulated Wire Co., 114 Liberty St., New York.
Okonite Co., Ltd., 253 Broadway, New York.
Roebling's, John A., Sons Co., Trenton, N. J.
Safety Insulated Wire & Cable Co., 118 Liberty St., New York.
Simplex Electrical Co., 110 State St., Boston, Mass.
Standard Underground Cable Co., Pittsburg, Pa.

358 **Insulated, Weather Proof.** For exterior use, on pole lines, etc.

American Electrical Works, Providence, R. I.
American Insulated Wire & Cable Co., 241 S. Jefferson St., Chicago, Ill.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Ansonia Brass & Copper Co., 99 John St., New York.
Ansonia Electrical Co., Ansonia, Conn.
Bridgeport Brass Co., Bridgeport, Conn.
Chicago Insulated Wire Co., 152 Lake St., Chicago, Ill.
Collyer Insulated Wire Co., Pawtucket, R. I.
Columbus Insulated Wire & Brass Co., Columbus, O.

WIRE, INSULATED, continued.

General Electric Co., Schenectady, N. Y.
Hazard Mfg. Co., Wilkesbarre, Pa.
Holmes, Booth & Haydens Co., Waterbury, Conn.
Magnet Wire Co., 80 William St., New York.
Monarch Electric & Wire Co., 125 S. Clinton St., Chicago, Ill.
Moore, Alfred F., 200 N. 3d St., Philadelphia, Pa.
National Conduit & Cable Co., 41 Park Row, New York.
Okonite Co., Ltd., 253 Broadway, New York.
Phillips Insulated Wire Co., Pawtucket, R. I.
Roebling's, John A., Sons Co., Trenton, N. J.
Simplex Electrical Co., 110 State St., Boston, Mass.
Standard Underground Cable Co., Pittsburg, Pa.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

359 **Iron and Steel, Galvanized.** For aerial telegraph and telephone lines.

American Electrical Works, Providence, R. I.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Chicago Insulated Wire Co., 152 Lake St., Chicago, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.

360 **Resistance.** German silver or platinoid wire for use in resistance coils and rheostats.

American Electrical Works, Providence, R. I.
Boker, Hermann, & Co., 101 Duane St., New York.
Bradford, Kyle & Co., Plymouth, Mass.
Bridgeport Brass Co., Bridgeport, Conn.
Coe Brass Mfg. Co., Ansonia, Conn.
Driver-Harris Wire Co., Harrison, N. J.
Empire Wire Co., 92 William St., New York. *See adv. page 72.*
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Holmes, Booth & Haydens Co., Waterbury, Conn.
Macomber & Whyte Rope Co., 21 S. Canal St., Chicago, Ill.
Moore, Alfred F., 200 N. 3d St., Philadelphia, Pa.
New England Electrical Works, Lisbon, N. H.
Plume & Atwood Mfg. Co., Waterbury, Conn.
Prosser, Thos., & Son, 15 Gold St., New York.
Seymour Mfg. Co., Seymour, Conn.
Wolff, R. H., & Co., Ft. E. 118th St., New York.

361 **"X-RAY" OUTFITS.** Apparatus for production of X-Ray photographs, and other actinic or fluorescent effects.

Birtman, C. F., Co., 45 Randolph St., Chicago, Ill.
Dodd & Struthers, Des Moines, Ia.
Electro-Medical Mfg. Co., 59th & Wallace Sts., Chicago, Ill.
Foote, Pierson & Co., 82 Fulton St., New York.
Green & Bauer, 33 Wells St., Hartford, Conn.
Harvard Electric Co., 226 S. Clinton St., Chicago, Ill.
Heinze Electric Co., Lowell, Mass.
Jackson, Francis E., Orange, N. J.
Jackson, Howard, 79 Franklin St., Boston, Mass.
Keystone Electric Co., Erie, Pa.
Kidder, Jerome, Mfg. Co., 820 Broadway, New York.
Lamont, G. E., San Francisco, Cal.
McElliott & Becker, 35 State St., Chicago, Ill.
McIntosh Battery & Optical Co., 39 W. Randolph St., Chicago.

X-RAY OUTFITS, continued.

Noxon, C. P. Lee, Syracuse, N. Y.
P. & W. Electric Co., Newburg, N. Y.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Ruprecht Electric Co., Cleveland, O.
Sorensen Mfg. Co., Ravenna, Ohio.
Swett & Lewis Co., 18 Boylston St., Boston, Mass.
Thorp, W. Grant, Newburg, N. Y.
Victor Electric Co., 55-61 Market St., Chicago, Ill.
Wagner, R. V., & Co., 308 Dearborn St., Chicago, Ill.
Waite & Bartlett Mfg. Co., 217 E. 23d St., New York.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa.
Williams, E. Q., 316 E. Water St., Syracuse, N. Y.
Willyoung & Gibson Co., 40 W. 13th St., New York.
Ziegler Apparatus Co., 200 Summer St., Boston, Mass.

362 **ZINCS, BATTERY.** Electrodes of zinc for use as cathodes in batteries.

Ansonia Electrical Co., Ansonia, Conn.
Beattie Zinc Works Co., Reading, Mass.
Boston Electric Co., 29 Harrison Ave., Extension, Boston, Mass.
Bryant Mfg. Co., 125 Indiana St., Chicago, Ill.
Bryant Zinc Co., 71 W. Adams St., Chicago, Ill.
Eastern Carbon Works, Jersey City, N. J.
Edes Mfg. Co., Plymouth, Mass.
Flint-Lomax Electric & Mfg. Co., Denver, Colo.
Franklin Zinc & Mfg. Co., Pittsburg, Pa.
Gordon Battery Co., 439 E. 144th St., New York.
Holtzer-Cabot Electric Co., Brookline, Mass.
Illinois Zinc Co., Peru, Ill.
Lamarche's, H., Sons, 81 John St., New York.
Leclanché Battery Co., 117 E. 131st St., New York.
Lovell, F. H., & Co., 92 William St., New York.
Manhattan Electrical Supply Co., 32 Cortlandt St., New York.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
Meyrowitz, E. B., 104 East 23d St., New York.
Modern Electric Co., Burlington, Iowa.
National Carbon Co., W. Madison and Highland Aves., Cleveland, O.
North Electric Co., 149-159 St. Clair St., Cleveland, Ohio.
Ogden-Ross Electric Mfg. Co., Madison, Ind.
Partrick, Carter & Wilkins, 1231 Callowhill St., Philadelphia.
Pearce, Fredk., 18 Rose St., New York.
Phillips, E., & Sons, South Hanover, Mass.
Prescott, J. R., & Son, Webster, Mass.
Prime Western Zinc Co., 1116 Sycamore St., Terre Haute, Ind.
Viaduct Mfg. Co., Baltimore, Md.
Waterbury Battery Co., Waterbury, Conn.
Western Electric Co., 259 S. Clinton St., Chicago, Ill.

SECTION II

STEAM APPLIANCES

INDEX TO DEPARTMENTS.

	Page
Boilers	274
Engines	299
Motors	316
Steam Appliances in General	316
Power Transmission Appliances	357
Pumps	387

MANUFACTURERS OF

STEAM APPLIANCES.

Alphabetical Index.

This list does not include makers of tubular boilers as these are arranged alphabetically according to States.
See pages 275 to 298 inclusive.

Abele, Chris, 537 West 50th St., New York.—Couplers, Pulleys.
Abendroth & Root Mfg. Co., 99 John St., New York.—Riveted Pipe, Water Tube Boilers.
Acme Stoker Co., 95 Liberty St., New York.—Mechanical Stokers.
Acton, John, 118 John St., Brooklyn, N. Y.—Grease Extractors.
Adams, S., & Son, Rome, N. Y.—Marine Engines.
Adams, W. T., Machine Co., Corinth, Miss.—Boilers and Engines.
Advance Mfg. Co., Hamilton, O.—Gas or Gasoline Engines.
Advance Packing & Supply Co., 55 S. Canal St., Chicago, Ill.—Packing.
Advance Pump & Compressor Co., Battle Creek, Mich.—Air Compressors, Power Pumps.
Advance Thresher Co., Battle Creek, Mich.—Traction Engines.
Ajax Iron Works, Corry, Pa.—Gas or Gasoline Engines.
Akron Belting Co., Akron, O.—Belting.
Akron Electrical Mfg. Co., Akron, O.—Locomotive Engines.
Alabama Tube & Iron Co., Birmingham, Ala.—Wrought Iron Pipe.
Alexander & Crouch, 70 W. Randolph St., Chicago, Ill.—Gasoline Engines.
Albany Belting & Supply Co., Albany, N. Y.—Leather Belting.
Albany Steam Trap Co., Albany, N. Y.—Steam Traps, Power Pumps, etc.
Alberger Condenser Co., 95 Liberty St., New York.—Power Pumps, Cooling Towers.
Albion Engine & Motor Co., Albion, Mich.—Gas or Gasoline Engines.
Albro-Clem Elevator Co., 7th and Glenwood Ave., Philadelphia, Pa.—Gears.
Alden, R., & Sons, Wauhegan, Ill.—Loose Pulley Oilers.
Alden Rubber Co., Akron, O.—Packing.
Alexander Bros., 410 N. 3d St., Philadelphia, Pa.—Leather Belting.
American Gas Engine Co., Portland, Me.—Gas Engines.
Allen, W. D., Mfg. Co., 151 Lake St., Chicago, Ill.—Packing, Belting, etc.
Allentown Foundry & Mch. Works, Allentown, Pa.—Hydraulic Engines.
Allentown Rolling Mills, Allentown, Pa.—Electric Pumps.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.—Boilers, Engines, Power Pumps, etc.
Allman Gas Engine & Machine Co., 29-31 Sullivan St., New York.—Gas Engines.
Almond, T. R., 83 Washington St., Brooklyn, N. Y.—Clamp Couplings.
Almy Water Tube Boiler Co., Providence, R. I.—Water Tube Boilers.
Alpena Industrial Works, Alpena, Mich.—Valves.
Althouse-Wheeler Co., Waupun, Wis.—Beer and Ale Pumps.
American Air Compressor Works, 26 Cortlandt St., New York.—Air Compressors, Pumps.
American Blower Co., Detroit, Mich.—Automatic Engines.
American & British Mfg. Co., Providence, R. I.—Boilers and Engines.
American Diesel Engine Co., 11 Broadway, New York.—Oil Engines.
American District Steam Co., Lockport, N. Y.—Grease Extractors, Valves, etc.
American Engine Co., Bound Brook, N. J.—Automatic and Compound Engines.
American Engineering Co., Springfield, O.—Gas or Gasoline Engines.
American Fire Engine Co., Seneca Falls, N. Y.—Pumps.
Alamo Mfg. Co., Hillsdale, Mich.—Gasoline Engines.
American Injector Co., Detroit, Mich.—Ejectors, Injectors, Lubricators.
American Locomotive Co., 25 Broad St., New York.—Locomotive Engines.
American Machine Co., Wilmington, Del.—Hot Air Pumps.
American Mfg. Co., 63 Wall St., New York.—Tramission Rope.
American Oil Co., Providence, R. I.—Belt Dressing.
American Pulley Co., 29th and Bristol Sts., Philadelphia, Pa.—Pulleys.
American Pump & Supply Co., Toledo, O.—Beer and Ale Pumps.
American Radiator Co., Chicago, Ill.—House Heating Boilers.
American Road Machine Co., Kennett Square, Pa.—Portable Engines.
American Spiral Pipe Works, 1173 S. Paulina St., Chicago, Ill.—Exhaust Heads, Riveted Pipe.
American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.—Gauges, Indicators, Test Pumps, etc.
American Steam Packing Co., 60 Federal St., Boston, Mass.—Packing.
American Steam Pump Co., Battle Creek, Mich.—Air Compressors, Power Pumps.
American Tool & Machine Co., 109 Beach St., Boston, Mass.—Bearings, Couplings, Pulleys, etc.
American Twist Drill Co., Laconia, N. H.—Friction Couplings.
American Valve Co., Coxsackie, N. Y.—Gate and Radiator Valves.
American Vulcanized Fibre Co., Wilmington, Del.—Gaskets, Packing.
American Water Motor Co., Columbus, O.—Air Compressors.
American Well Works, Aurora, Ill.—Air Compressors, Centrifugal Pumps.
Ames Iron Works, Oswego, N. Y.—Boilers, Engines.

Anchor Belt Grease Mfg. Co., Mechanicsburg, Pa.—Belt Dressing.
Amstutz & Osborn Co., Caxton Bldg., Cleveland, O.—Gasoline Motors.
Anderson, Carl, Co., 23 N. Clinton St., Chicago, Ill.—Gas or Gasoline Engines.
Anderson, W. H., & Sons, Inc., Detroit, Mich.—Hoisting Engines.
Anderson Foundry & Machine Wks., Anderson, Ind.—High Speed Engines.
Anderson Tool Co., Anderson, Ind.—Gas or Gasoline Engines.
Archambo Heating Co., 219 S. 3d St., Minneapolis, Minn.—House Heating Boilers.
Argon Mfg. Co., Denver, Colo.—Radiator Valves.
Armitage-Herschell Co., North Tonawanda, N. Y.—Boilers and Portable Engines.
Arny, C. W., & Son, 228 N. 3d St., Philadelphia, Pa.—Leather Belting.
Arthur Co., 188 Front St., New York.—Valves, Gears, etc.
Asbestos Mfg. Co., 426 Market St., Philadelphia, Pa.—Packing.
Ashcroft Mfg. Co., 85 Liberty St., New York.—Condensers, Gages, Vacuum Pumps, etc.
Ashton Valve Co., 271 Franklin St., Boston, Mass.—Valves, Gages, Vacuum Pumps, etc.
Ashurst Press Drill Co., Havana, Ill.—Gas or Gasoline Engines.
Athol Pump Co., Athol, Mass.—Power Pumps.
Atlantic Works, 70 Border St., E. Boston, Mass.—Boilers, Engines, Condensers, etc.
Atlas Engine Works, Indianapolis, Ind.—Boilers, Engines, etc.
Atwell Machinery Co., Pittsburg, Pa.—Steam Pumps.
Aultman Co., Canton, O.—Boilers, Engines, etc.
Aultman & Taylor Mchy. Co., Mansfield, O.—Boilers, Engines.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.—Air Compressors.
Austin Separator Co., Detroit, Mich.—Grease Extractors, Steam Separators.
Ayres Gasoline Engine & Motor Works, Saginaw, Mich.—Gasoline Motors, etc.
Babcock & Wilcox Co., 85 Liberty St., New York.—Boilers, Stokers, Superheaters. *See adv. page 108.*
Backus Water Motor Co., Newark, N. J.—Gas or Gasoline Engines, Water Motors.
Bailey, F. E., & Co., Reading, Pa.—Oil Filters and Lubricators.
Bailey-Farrell Mfg. Co., Pittsburg, Pa.—Gage Cocks, Valves.
Baird Machinery Co., Pittsburg, Pa.—Air Compressors.
Baird Portable Machine Co., Topeka, Kans.—Pneumatic Motors.
Baldwin Engineering Co., 107 W. 17th St., New York.—Grease Extractors.
Baldwin Locomotive Works, 500 N. Broad St., Philadelphia, Pa.—Locomotive Boilers and Engines.
Ball Engine Co., Erie, Pa.—Engines.
Ball & Wood Co., 17 Battery Place, New York.—Engines.
Baltimore Ship Building & Dry Dock Co., Locust Point, Baltimore, Md.—Marine Boilers and Engines.
Bangs Oil Cup Co., Milwaukee, Wis.—Oil Cups.
Bantam Mfg. Co., Bantam, Conn.—Worm Wheel Gears.

Baragwanath, Wm., & Son, 54 N. Division St., Chicago, Ill.—Condensers, Feed Water Filters, etc.
Barnes, Charles, Co., 53 Main St., Cincinnati, O.—Boilers, Engines.
Barnes & Erb Co., 3846 Lancaster Ave., Philadelphia, Pa.—Oil Cups.
Barnes Mfg. Co., Mansfield, O.—Beer and Ale Pumps, Power Pumps, etc.
Barnum Bros. Co., Troy, N. Y.—Belting, Belt Dressing.
Barnum, W. P., Fredonia, N. Y.—Valve Reseating Machines.
Barr Pump Co., Germantown, Philadelphia, Pa.—Air Compressors, Power Pumps, etc.
Barrauth Bros., Springfield, O.—Gas or Gasoline Engines.
Bashlin Co., Warren, Pa.—Globe Valves.
Bass Foundry & Machine Co., Fort Wayne, Ind.—Boilers and Engines.
Bates & Edmonds Motor Co., Lansing, Mich.—Gasoline Motors.
Bates Machine Co., Joliet, Ill.—Feed Water Filters, Heaters.
Bath Iron Works, Bath, Me.—Boilers and Engines.
Battle Creek Steam Pump Co., Battle Creek, Mich.—Power Pumps.
Bauer Machine Works Co., Kansas City, Mo.—Gasoline Engines.
Baum Separator & Machine Co., Manheim, Pa.—Grease Extractors, Steam Separators.
Bay City Iron Co., Bay City, Mich.—Boilers and Marine Engines.
Bay State Belting Co., Salem, Mass.—Leather Belting.
Bay State Gas Engine Co., Merrimac St., Boston, Mass.—Gas or Gasoline Engines.
Bayley, Wm., & Sons Co., Milwaukee, Wis.—Steam Traps.
Beggs, Jas., & Co., 9 Dey St., New York.—Boilers, Grate Bars.
Beilfuss Motor Co., Lansing, Mich.—Gas or Gasoline Engines.
Belden, A. G., & Co., 145 Maiden Lane, New York.—Belt Dressing.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.—Gages, Valves, Power Pumps, etc.
Belknap Mfg. Co., Bridgeport, Conn.—Pipe Fittings, Valves.
Bell, David, Engineering Works, Buffalo, N. Y.—Marine Engines.
Beloit Iron Works, Beloit, Wis.—Centrifugal and Power Pumps.
Benedict Mfg. Co., 7 Rochester St., Salamanca, N. Y.—Friction Clutches.
Benicia Agricultural Works, Benicia, Cal.—Traction Engines.
Benton Harbor Machine Co., Benton Harbor, Mich.—Gasoline Engines.
Berger Mfg. Co., Canton, O.—Beer and Ale Pumps.
Bernard, E. G., Co., Troy, N. Y.—Electric Pumps.
Berry Engineering Co., Chester, Pa.—Regulators.
Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.—Oil Cups.
Bessemer Gas Engine Co., Grove City, Pa.—Gas or Gasoline Engines.
Best, John (Estate of), Lancaster, Pa.—Boilers, Engines, etc.
Best Mfg. Co., Pittsburg, Pa.—Water Columns, Valves, etc.
Best Mfg. Co., San Leandro, Cal.—Engines.
Bickel, Fred L., 1348 Palmer St., Philadelphia, Pa.—Steam Traps.

Bickford & Francis Belting Co., Buffalo, N. Y.—Leather Belting.
Biggs, B. F., Pump Co., Lafayette, Ind.—Beer and Ale Pumps.
Bilgram, Hugo, 440 N. 12th St., Philadelphia, Pa.—Gears.
Bingham & Co., 1004 Moravian St., Philadelphia, Pa.—Exhaust Heads.
Binghamton Machine Tool Works, Binghamton, N. Y.—Safety Water Columns.
Bishop & Babcock Co., Hamilton and Kirtland Sts., Cleveland, O.—Diaphragm Pumps.
Black-Clawson Co., Hamilton, O.—Centrifugal Pumps.
Blaisdell Machinery Co., Bradford, Pa.—Air Compressors.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.—Blowing Engines, Power Pumps, etc.
Blake, W. H., Steam Pump Co., Fitchburg, Mass.—Power Pumps.
Blake & Andros, 28 Portland St., Boston, Mass.—House Heating Boilers, Pipe Fittings, etc.
Blakeslee Mfg. Co., Du Quoin, Ill.—Ejectors, Power Pumps.
Blanchard Machine Co., Boston, Mass.—Air Compressors.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.—Elevator, Crank and Flywheel Pumps.
Bloomsburg, H., & Co., 700 Dolphin St., Baltimore, Md.—Feed Water Circulators.
Bodifield Belting Co., Cleveland, O.—Leather Belting.
Boekel, Wm., & Co., 518 Vine St., Philadelphia, Pa.—Copper Floats.
Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.—Centrifugal Pumps.
Bonar, Jas., & Co., Pittsburg, Pa.—Exhaust Heads, Steam Traps, etc.
Bonner, Wm. T., & Co., 53 State St., Boston, Mass.—Gages, Valves, etc.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.—Gas or Gasoline Engines, etc.
Bordo, L. J., 12th and Thompson Sts., Philadelphia, Pa.—Blow Off Valves.
Born, J. C., & Bro., Machine Works, Belleville, Ind.—Vertical Engines.
Boston Belting Co., 256 Devonshire St., Boston, Mass.—Packing, Belting, etc.
Boston Brass Co., 36 Oliver St., Boston, Mass.—Brass Pipe Fittings, etc.
Boston Gear Works, Purchase and Pearl Sts., Boston, Mass.—Gears.
Boston & Lockport Block Co., 160 Commercial St., Boston, Mass.—Bushings, Beer and Ale Pumps, etc.
Boston Steam Specialty Co., 170 Congress St., Boston, Mass.—Ejectors, Steam Traps, etc. *See adv. page 116.*
Bourbon Copper & Brass Works, Cincinnait, O.—Gate Valves.
Bowen Mfg. Co., Auburn, N. Y.—Lubricators and Oil Cups.
Boyts, Porter & Co., Connellsville, Pa.—Power and Steam Pumps.
Bradlee & Co., Beach St. and E. Susquehanna Ave., Philadelphia, Pa.—Chain Belting.
Brainerd Steam Trap Co., 12 Howes St., Boston, Mass.—Steam Traps.
Brandt, Randolph, 38 Cortlandt St., New York.—Gaskets, Packing.

Bridgeport Boiler Works, Bridgeport, Conn.—Boilers, Feed Water Heaters.
Bridgeport Chain Co., Bridgeport, Conn.—Chain Belting.
Bridgeport Machine & Motor Co., Bridgeport, Conn.—Marine Engines.
Brightman Furnace Co., Cleveland, O.—Grate Bars and Stokers.
Bristol Co., Waterbury, Conn.—Gages, Belt Fasteners, etc.
Broderick & Bascom Rope Co., St. Louis, Mo.—Transmission Rope.
Bronbacker, Max H. C., Buffalo, N. Y.—Gas or Gasoline Engines.
Brooklyn Leather Belting Co., 42 S. 6th St., Brooklyn, N. Y.—Leather Belting.
Brooklyn Steam Packing & Supply Co., 206 Centre St., New York.—Packing.
Brown, A. & F., Co., 25 Dey St., New York.—Hangers, Pulleys, Clutches, etc.
Brown, C. H., & Co., Fitachburg, Mass.—Automatic Cut Off Engines.
Brown, Edward, 915 Samson St., Philadelphia, Pa.—Mercury Gages.
Brown-Cochran Co., Lorain, O.—Gas or Gasoline Engines.
Brown Corliss Engine Co., Corliss, Wis.—Corliss Engines.
Brown Hoisting Machinery Co., Cleveland, O.—Hoisting Engines.
Brownell Co., Dayton, O.—Boilers, Engines, etc. *See adv. page 105.*
Brownville Iron Works, Brownville, N. Y.—Centrifugal Pumps.
Brunner, Charles, Peru, Ill.—Gasoline Engines.
Buckeye Engine Co., Salem, O.—Engines.
Buckeye Gas & Gasoline Engine Co., Aurora, Ill.—Gas and Gasoline Engines.
Buckeye Iron & Brass Works, Dayton, O.—Gages, Lubricators, Valves, etc.
Bucyrus Co., S. Milwaukee, Wis.—Hoisting Engines, Centrifugal Pumps.
Buescher Mfg. Co., Elkhart, Ind.—Beer and Ale Pumps.
Buffalo Engine Co., Buffalo, N. Y.—Gasoline Engines.
Buffalo Feed Water Heater & Purifier Co., White Bldg., Buffalo, N. Y.—Feed Water Heaters and Purifiers.
Buffalo Forge Co., Buffalo, N. Y.—Engines.
Buffalo Pitts Co., Buffalo, N. Y.—Traction Engines.
Buffalo Specialty Mfg. Co., Buffalo, N. Y.—Belt Dressing, etc.
Buffalo Steam Pump Co., North Tonawanda, N. Y.—Air Compressors. Pumps.
Buhl Malleable Co., Adair and Wright Sts, Detroit, Mich.—Sprocket Wheels, Beer and Ale Pumps.
Builders Iron Foundry, Providence, R. I.—Cast Iron Pipe, Water Motors.
Bulkley, Henry W., 141 Broadway, New York.—Condensers, Feed Water Heaters, Steam Pumps.
Bullock, C. K., 1361 Ridge Ave., Philadelphia, Pa.—Expanders, Sprocket Wheels.
Burdett-Rowntree Mfg. Co., 85-87 W. Jackson St., Chicago, Ill.—Power and Steam Pumps.
Burlingame, A., Co., Worcester, Mass.—Boilers, Portable Engines.

Burrell, D. H., & Co., Little Falls, N. Y.—Vertical Engines.
Burroughs, Charles, Co.. Newark, N. J.—Hydraulic Valves, Power Pumps.
Burrows Mfg. Co., Williamsport, Pa.—Pump Governors, Regulators.
Bushnell, G. H., Mfg. Co., Thompsonville, Conn.—Vacuum Pumps.
Bushnell, John S., Co., 126 Liberty St., New York.—Flue Cleaners, Grease Extractors, etc.
Bushnell Pump Co., Bushnell, Ill.—Syphon Pumps.
Burt Mfg. Co., Akron, O.—Exhaust Heads, Oil Filters.
Butman Boiler Furnace Co., Monadnock Blk., Chicago, Ill.—Boilers, Grate Bars, etc.
Byers, A. M., & Son, Pittsburg, Pa.—Wrought Iron Pipe.
Byers, John F., Machine Co., Ravenna, O.—Boilers, Engines.
Cadman, A. W., Mfg. Co., Pittsburg, Pa.—Injectors, Blow Off Valves.
Caldwell, H. W., & Son Co., Chicago, Ill.—Gears.
Callahan, W. P., & Co., Dayton, O.—Gas or Gasoline Engines.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., New York.—Centrifugal, Power and Steam Pumps. *See adv. page 112.*
Cameron-Tennant Machine Works, Richmond, Va.—Power and Steam Pumps.
Camp Engineering Co., 47 W. Lake St., Chicago, Ill.—Power and Steam Pumps.
Campbell, J. Vernon, Baltimore, Md.—Water Tube Boilers.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.—Throttling Engines.
Campbell, S. K., Central Bridge, N. Y.—Portable Engines.
Cancos Mfg. Co., 146 No. 2d St., Philadelphia, Pa.—Packing.
Canfield, H. O., Bridgeport, Conn.—Gaskets.
Canfield Mfg. Co., Ltd., 1112-1122 Noble St., Philadelphia, Pa.—Packing.
Canton Pump Co., Canton, O.—Power and Steam Pumps.
Capital City Machine Works, Columbus, O.—Shafting.
Capital Gas Engine Co., Indianapolis, Ind.—Gas or Gasoline Engines.
Cardwell Machine Co., Richmond, Va.—Power and Steam Pumps.
Carey, W. W., Lowell, Mass.—Pulleys.
Carlins', Thos., Sons. Co., Allegheny, Pa.—Boilers, Engines, Centrifugal Pumps.
Carman-Thompson Co., Lewiston, Me.—House Heating Boilers.
Carpenter, Geo. B., & Co., 208 Water St., Chicago, Ill.—Transmission Rope.
Carpenter, Thomas D., Machine Works, 93 Pearl St., Brooklyn, N. Y.—Steam Pumps.
Carroll Iron Works, 719 Carroll Ave., Chicago, Ill.—Windmill Pumps.
Carroll-Porter Boiler & Tank Co., Reading, Pa.—Riveted Pipe.
Carruthers-Fithian Clutch Co., Grove City, Pa.—Friction Clutches.
Carthage Machine Co., Carthage, N. Y.—Paper Mill Pumps.
Case, J. I., Threshing Machine Co., Racine, Wis.—Traction Engines.
Casey & Hedges Mfg. Co., Chattanooga, Tenn.—Boilers, Stokers, etc.

Cassel Auto Water Motor Co., Seattle, Wash.—Water Motors.
Cedar Rapids Foundry & Machine Co., Cedar Rapids, Ia.—Gasoline Engines.
Cedar Rapids Pump Co., Cedar Rapids, Iowa.—Hand and Windmill Pumps.
Central Brass Works, Cincinnati, O.—Brass Fittings, Valves.
Central City Iron Works, Stevens Point, Wis.—Gas or Gasoline Engines.
Challenge Windmill & Feed Mill Co., Batavia, Ill.—Centrifugal, Hand and Windmill Pumps.
Chambers & Ainslie, Newark, N. J.—Beer and Ale Pumps.
Chambersburg Engineering Co., Chambersburg, Pa.—Portable Engines.
Champion Flue Scraper Co., Peoria, Ill.—Boiler Tube Cleaners.
Chandler & Taylor Co., Indianapolis, Ind.—Boilers, Engines.
Chaplin-Fulton Mfg. Co., Pittsburg, Pa.—Ejectors, Syphon Pumps.
Chapman Valve Mfg. Co., Indian Orchard, Mass.—Valves.
Charlotte Supply Co., Charlotte, N. C.—Leather Belting.
Charter Gas Engine Co., Sterling, Ill.—Gas or Gasoline Engines.
Chase Engine & Mfg. Co., Mattoon, Ill.—High Speed Engines.
Chase Machine Co., Cleveland, O.—Steering Engines.
Chase Pulley Co., Providence, R. I.—Pulleys.
Chelsea Mfg. Co., Chelsea, Mich.—Gasoline Motors.
Chesapeake Belting Co., Baltimore, Md.—Canvas Belting.
Chester Steel Castings Co., 407 Sansom St., Philadelphia, Pa.—Gears.
Chesterton, A. W., & Co., 64 India St., Boston, Mass.—Packing, Boiler Tube Cleaners.
Chicago Belting Co., 69 S. Canal St., Chicago, Ill.—Leather Belting.
Chicago Fireproof Covering Co., 18 N. Canal St., Chicago, Ill.—Packing.
Chicago Flexible Shaft Co., La Salle Ave. and Ontario St., Chicago, Ill.—Flexible Shafting. *See adv. page 125.*
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.—Pneumatic Motors, Air Compressors.
Chicago Rawhide Mfg. Co., 75 Ohio St., Chicago, Ill.—Rawhide Belting.
Chicago Ship Building Co., 101st St. and Calumet River, Chicago, Ill.—Marine Engines.
Christiana Machine Co., Christiana, Pa.—Gears, Pulleys, Shafting.
Chuse Engine & Mfg. Co., Mattoon, Ill.—Portable Engines.
Clark, E. S., 272 Freeport St., Boston, Mass.—Boilers, Engines.
Clark Bros., Belmont, N. Y.—Engines and Hand Pumps.
Clark Bros. Co., Vicksburg, Mich.—Water Columns, Regulators.
Clark Engine & Boiler Co., Kalamazoo, Mich.—Boilers and Engines.
Clark Novelty Co., Rochester, N. Y.—Air Compressors, Vacuum Pumps.
Clayton Air Compressor Works, 114 Liberty St., New York.—Air Compressors, Power Pumps, etc.
Cleveland Faucet Co., 15 Frankfort St., Cleveland, O.—Air Compressors, Hand Pumps.

Cleveland Flue Cleaner Mfg. Co., Cleveland, O.—Boiler Tube Cleaners.
Cleveland Galvanizing Works, Cleveland, O.—Hand Pumps.
Cleveland Gear Works, Cleveland, O.—Gears.
Cleveland Pneumatic Tool Co., Cleveland, O.—Air Compressors.
Cleveland Rubber Works, Cleveland, O.—Rubber Belting.
Cleveland Steam Gauge Co., Cleveland, O.—Vacuum Gages.
Clifton Motor Works, 229 E. Clifton Ave., Cincinnati, O.—Gasoline Motors.
Climax Mfg. Co., Corry, Pa.—Locomotive Engines.
Cling Surface Mfg. Co., Buffalo, N. Y.—Belt Dressing. *See adv. page 103.*
Clinton Mfg. Co., 83 Grand Ave., Brooklyn, N. Y.—Packing.
Clonbrock Steam Boiler Co., Lorraine and Court Sts., Brooklyn, N. Y.—Water Tube Boilers.
Clow, J. B., & Sons, Harrison & Franklin Sts., Chicago, Ill.—Low Water Alarms, Cast Iron Pipe.
Clum, P. A., & Co., Rochester, N. Y.—Boiler Feeders.
Coale Muffler & Safety Valve Co., Baltimore, Md.—Safety Valves.
Coates Clipper Mfg. Co., Worcester, Mass.—Flexible Shafting.
Cochrane, J. A., Cleveland, O.—Gages, Injectors, Lubricators.
Coe & Brown, New Haven, Conn.—Leather Belting.
Coffin Valve Co., Neponset, Mass.—Valves.
Coggeshall Mfg. Co., Branford, Conn.—Boiler Tube Cleaners.
Cohoes Rolling Mill Co., Cohoes, N. Y.—Wrought Iron Pipe.
Colean Mfg. Co., Peoria, Ill.—Traction Engines.
Colles, E. G. T., & Co., 42 Clinton St., Chicago, Ill.—Feed Water Heaters and Purifiers.
Collins, F. F., Mfg. Co., San Antonio, Tex.—Boilers and Engines.
Collins Iron Works, Long Island City, N. Y.—Tanks.
Collins Mfg. Co., Ltd., Conshohocken, Pa.—Regulators and Oil Filters.
Colonial Foundry & Machy. Co., Inc., South Norwalk, Conn.—Gas or Gasoline Engines.
Columbian Cordage Co., Auburn, N. Y.—Transmission Rope.
Columbiana Pump Co., Columbiana, O.—Hand, Power and Steam Pumps.
Columbus Brass Co., Columbus, O.—Globe Valves.
Columbus Machine Co., Columbus, O.—Gas or Gasoline Engines. *See adv. page 118.*
Combination Rubber & Belting Co., Bloomfield, N. J.—Gages, Packing and Belting.
Common Sense Metallic Packing Mfg. Co., 393 Pearl St., New York.—Gaskets and Packing.
Comstock & Coonse Co., Indianapolis, Ind.—Hand Pumps.
Comstock Mfg. Co., Comstock, Mich.—Boilers, Engines.
Conard, Thomas P., 119 S. 4th St., Philadelphia, Pa.—Steam Pumps.
Connersville Blower Co., Connersville, Ind.—Rotary Pumps.
Conover Mfg. Co., Jersey City, N. J.—Condensers, Vacuum Pumps.
Consolidated Engine Stop Co., 100 Broadway, New York.—Engine Stops. *See adv. page 104.*
Consolidated Safety Valve Co., 89 Liberty St., New York.—Valves.

Continental Gin Co., Birmingham, Ala.—Boilers and Engines.
Contractor's Plant Mfg. Co., Buffalo, N. Y.—Hoisting Engines.
Cook, A. D., Lawrenceburg, Pa.—Windmill and Well Pumps.
Cook, C. Lee, Louisville, Ky.—Packing.
Cook Mfg. Co., Albion, Mich.—Gasoline Engines.
Cook Well Co., 703 Market St., St. Louis, Mo.—Power and Steam Pumps.
Cooper, C. & G., Co., Mt. Vernon, O.—Engines.
Co-operative Foundry, Detroit, Mich.—Grate Bars.
Corcoran, Andrew J., 11 John St., New York.—Windmill Pumps.
Corliss Gas Engine Co., 227 Folsom St., San Francisco, Cal.—Gas Engines.
Couse, Chas., & Co., 39 Dey St., New York.—Lubricators.
Covel Mfg. Co., 8-10 S. Canal St., Chicago, Ill.—Belt Fasteners.
Cox & Sons Co., Bridgeton, N. J.—Corliss Engines and Feed Water Heaters.
Cox Brass Mfg. Co., Ltd., Albany, N. Y.—Beer and Ale Pumps.
Craft, Jesse, 260 Front St., New York.—Steam and Power Pumps.
Cramp, Wm., & Sons, Ship & Engine Building Co., Beach and Ball Sts., Philadelphia, Pa.—Boilers, Engines.
Crandall Packing Co., Palmyra, N. Y.—Packing.
Crane Co., 10 N. Jefferson St., Chicago, Ill.—Pipe Fittings and Valves.
Crawford & McCrimmon Co., Brazil, Ind.—Hoisting Engines, Power Pumps.
Crawford, P. R., Heating & Mfg. Co., Cleveland, O.—Exhaust Heads.
Creamer Steam Specialties Co., 123 Liberty St., New York.—Pump Governors and Steam Traps.
Creamery Package Mfg. Co., 180 Kinzie St., Chicago, Ill.—Rotary Pumps.
Crescent Belting & Packing Co., Trenton, N. J.—Gaskets, Belting.
Crescent Mfg. Co., 96 Crescent Place, Yonkers, N. Y.—Metallic Packing.
Crescent Steel Co., Pittsburg, Pa.—Belt Fasteners.
Cresson, Geo. V., Co., Allegheny Ave., West of 17th St., Philadelphia, Pa.—Clutches, Hangers, Pulleys, etc.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.—Water Columns, Valves, Gages, etc.
Cross, E. M., Berlin, N. H.—Centrifugal Pumps.
Cross Bros. & Co., Rochester, N. Y.—Leather Belting.
Crowell, Gilmer, 294 Graham St., Brooklyn, N. Y.—Air Compressors.
Cruse & Connaughton, 534 S. Capitol Ave., Indianapolis, Ind.—Boilers.
Cumberland Steel Co., Cumberland, Md.—Couplings, Shafting.
Curtis & Co. Mfg. Co., St. Louis, Mo.—Air Compressors.
Curtis-Hall Mfg. Co., Hartford, Conn.—Feed Water Purifiers.
Cushman Motor Co., Lincoln, Neb.—Gasoline Motors.
Daimler Mfg. Co., Long Island City, N. Y.—Marine Engines.
Dake Engine Co., Grand Haven, Mich.—High Speed and Hoisting Engines.
Dame & Townsend Co., 76 John St., New York.—Steam Traps.
Darling Pump & Mfg. Co., Williamsport, Pa.—Power and Steam Pumps.

Dart, E. M., Mfg. Co., Providence, R. I.—Pipe Couplings.
D'Auria Pumping Engine Co., Philadelphia, Pa.—Steam Pumps.
Davenport Foundry & Machine Co., Davenport, Iowa.—Engines.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.—Air Compressors, Steam Pumps, etc.
Davis, I. B., & Son, Hartford, Conn.—Feed Water Heaters, Pumps.
Davis, F. H., & Co., Boston, Mass.—Steam Pumps.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.—Boiler Feeders, Steam Traps, etc.
Davis-Johnson Co., 47 S. Canal St., Chicago, Ill.—Power Pumps.
Davis & Roesch Temperature Controlling Co., 136 Liberty St., New York.—Temperature Regulators.
Day-Kincaid Stoker Co., Cincinnati, O.—Stokers.
Dayton Gas Engine Co., Dayton, O.—Gas or Gasoline Engines.
Dean, H. C., Fitchburg, Mass.—Reducing Wheels.
Dean Bros. Steam Pump Works, 10th St. and Senate Ave., Indianapolis, Ind.—Air Compressors, Power and Steam Pumps.
Deane Steam Pump Co., Holyoke, Mass.—Air Compressors, Power and Steam Pumps.
Dearing Water Tube Boiler Co., Detroit, Mich.—Water Tube Boilers.
Decatur Lumber & Mfg. Co., Decatur, Ill.—Hand Pumps.
Dederick's, P. K., Sons, Albany, N. Y.—Boilers and Engines.
Delamater Iron Works, 35 Warren St., New York.—Power Pumps.
Delaney Oil & Lubricant Co., Milwaukee, Wis.—Grease Cups.
Delaney, Patrick, & Co., Colden & Renwick Sts., Newburgh, N. Y.—Marine Engines and Blow Off Tanks.
De Laval Steam Turbine Co., 74 Cortlandt St., New York.—Steam Turbines.
De La Vergne Refrigerating Machine Co., Foot of E. 138th St., New York.—Oil Engines.
Delaware Hard Fibre Co., Wilmington, Del.—Packing, Gears.
Delaware Machine Works, Wilmington, Del.—Engines.
Deming Co., Salem, O.—Power and Steam Pumps.
Dempster Mill Mfg. Co., Beatrice, Neb.—Windmill Pumps.
Dennison Electric Engine Co., New Haven, Conn.—Portable Engines.
De Rycke, Joseph, 41 Cortlandt St., New York.—Exhaust Heads, Separators, etc.
Des Moines Gas Engine & Electric Co., Des Moines, Iowa.—Gas Engines.
Desmond-Stephan Mfg. Co., Urbana, Ohio.—Injectors.
D'Este, Julian, Co., 24 Canal St., Boston, Mass.—Regulators, Steam Traps, etc.
Detroit Leather Specialty Co., Beecher and Michigan Aves., Detroit, Mich.—Packing.
Detroit Lubricator Co., Detroit, Mich.—Oil Cups, Brass Pipe Fittings, etc.
Detroit Pump Co., Detroit, Mich.—Bilge and Rotary Pumps.
Devlin, Thos., Mfg. Co., 3d St., cor. Lehigh Ave., Philadelphia, Pa.—Pipe.

Diamond Drill and Machine Co., Birdsboro, Pa.—Belt Lacing Machines, etc. *See adv. page 123.*
Diamond Flask & Clamp Co., Richmond, Ind.—Drop Hangers.
Diamond Iron Works, Minneapolis, Minn.—Couplings, Gears.
Diamond Rubber Co., Akron, O.—Gaskets, Packing.
Diamond Stamped Ware Co., Detroit, Mich.—Copper Floats.
Dimmick Pipe Co., Birmingham, Ala.—Cast Iron Pipe.
Direct Separator Co., Syracuse, N. Y.—Exhaust Heads, Separators, etc.
Dissinger, C. H. A., & Bro., Wrightsville, Pa.—Gas or Gasoline Engines.
Dixon, Joseph, Crucible Co., Jersey City, N. J.—Belt Dressing.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.—Boilers, Centrifugal Pumps, etc.
Doble, Abner, Co., Fremont and Howard Sts., San Francisco, Cal.—Air Compressors.
Dodge Mfg. Co., Mishawaka, Ind.—Chain Belting, Couplings, Gears, etc.
Domestic Engine Co., Hagerstown, Md.—Gas or Gasoline Engines.
Donaldson Iron Co., Emaus, Pa.—Cast Iron Pipe.
Doolittle, S. B., & Son, Binghamton, N. Y.—Boiler Tube Cleaners.
Dopp, H. Wm., & Son, Buffalo, N. Y.—Vertical Engines, Pumps.
Douglas, W. & B., Middletown, Conn.—Air Compressors, Centrifugal Pumps, etc.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.—Power and Steam Pumps.
Downie Pump Co., Downieville, Pa.—Power and Steam Pumps.
Downington Mfg. Co., Ltd., East Downington, Pa.—Centrifugal Pumps.
Draper Mfg. Co., Port Huron, Mich.—Valve Reseating Machines.
Drummond, M. J., & Co., 192 Broadway, New York.—Cast Iron Pipe, Fittings, etc.
Du Bois Iron Works, Du Bois, Pa.—Gas or Gasoline Engines.
Dudgeon, Richard, 24 Columbia St., New York.—Boiler Tube Expanders.
Duluth Stoker Co., Duluth, Minn.—Stokers.
Durable Wire Rope Co., 28-30 Atlantic Ave., Boston, Mass.—Transmission Rope.
Dutton, C. H., Co., Kalamazoo, Mich.—Boilers and Engines.
Dyke, A. L., 1402 Pine St., St. Louis, Mo.—Gasoline Motors.
Eagle Bicycle Mfg. Co., Torrington, Conn.—Gas or Gasoline Engines.
Eagle Lubricator Co., 106 Canal St., Cleveland, O.—Ejectors.
Eagle Oil & Supply Co., 104 Broad St., Boston, Mass.—Packing, Belt Dressing, etc.
Earle Gear & Machine Co., Oxford and Mascher Sts., Philadelphia, Pa.—Gears.
East End Boiler Works, 19 St. Aubin Ave., Detroit, Mich.—Water Tube Boilers.
East Jersey Pipe Co., 71 Broadway, New York.—Riveted Pipe.
Eastern Machinery Co., New Haven, Conn.—Clutches, Couplings, etc.
Eastwood, Benj., Co., Paterson, N. J.—Hangers, Pulleys, etc.

Eastwood Wire Mfg. Co., Belleville, N. J.—Valves, Whistles.
Eaton, Cole & Burnham Co., 253 Broadway, New York.—Gages, Valves, etc.
Eclipse Governor Co., Vicksburg, Mich.—Governors.
Eddy Valve Co., Waterford, N. Y.—Gate Valves.
Edge Moor Iron Co., Wilmington, Del.—Water Tube Boilers and Locomotive Engines.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.—Hand, Power, and Steam Pumps.
Edwards, Joseph, & Co., 412 Water St., New York.—Engines, Centrifugal, and Steam Pumps.
Ehrsam, J. B., & Sons, Mfg. Co., Enterprise, Kans.—Water Tube Boilers, and Hand Pumps.
Electric Boiler Co., Rochester, N. Y.—House Heating Boilers.
Electric Heat Regulator Co., Minneapolis, Minn.—Regulators.
Elektron Mfg. Co., Springfield, Mass.—Pump Governors.
Elgin Mfg. Co., Elgin, Ill.—Power Pumps.
Ellington Mfg. Co., Quincy, Ill.—Gas or Gasoline Engines.
Ellingworth & Lance, Utica, N. Y.—Gas or Gasoline Engines.
Elliott, George E., Calais, Me.—Steam Pumps.
Elmes, Charles F., Engineering Works, 253 Fulton St., Chicago, Ill.—Power Pumps.
Elmore Mfg. Co., Clyde, O.—Gasoline Motors.
Elyria Gas Engine Co., Elyria, O.—Gas Engines.
Empire Engine & Motor Co., Orangeburg, N. Y.—Pneumatic Motors.
Empire Mfg. Co., Lockport, N. Y.—Canvas Belting.
Empire Rubber Mfg. Co., Trenton, N. J.—Packing and Belting.
Enterprise Mfg. Co., Columbiana, O.—Portable Engines.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.—Steam Pumps.
Erie City Iron Works, Erie, Pa.—Boilers and Engines.
Erie Engine Works, Erie, Pa.—Boilers and Engines.
Erie Machine Shops, Erie, Pa.—Feed Water Filters, etc.
Erie Mfg. & Supply Co., Erie, Pa.—Engines, Injectors, etc.
Erie Pump & Engine Co., Erie, Pa.—Engines, Centrifugal, and Steam Pumps.
Erwin & Co., 35 No. Canal St., Chicago, Ill.—Regulators, Power and Steam Pumps.
Eureka Bark Mill Co., Lancaster, Pa.—Centrifugal Pumps.
Eureka Iron Co., 14 No. Canal St., Chicago, Ill.—Steam Traps.
Evans Friction Cone Co., 85 Water St., Boston, Mass.—Speed Transmission Devices.
Evansville Leather Belting Co., Evansville, Ind.—Leather Belting.
Everhart Brass Works, Scranton, Pa.—Gage Cocks.
Excelsior Wooden Pipe Co., San Francisco, Cal.—Wooden Pipe.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.—Condensers, Injectors, Steam Traps, etc.
Faessler, John, Mfg. Co., Moberly, Mo.—Boiler Tube Expanders.
Fairbanks Co., Broome & Elm Sts., New York.—Boilers, Steam Specialties and Pumps.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.—Engines and Pumps.
Fairmount Machine Co., 2106 Wood St., Philadelphia, Pa.—Shafting.
Fales & Jenks Machine Co., Pawtucket, R. I.—Rotary Pumps.

Falkenau-Sinclair Machine Co., 109-115 No. 22d St., Philadelphia, Pa.—Hydraulic Valves.
Falls Rivet & Machine Co., Cuyahoga Falls, O.—Couplings, Hangers, etc.
Fancher Machine Co., Baldwinsville, N. Y.—Flexible Shafting.
Faries Mfg. Co., Decatur, Ill.—Flue Cleaners.
Farnan Brass Works, Cleveland, O.—Lubricators, Brass Pipe Fittings.
Farquhar, A. B. Co., Ltd., York, Pa.—Boilers and Engines.
Farwell Heating Co., Atchison, Kan.—House Heating Boilers.
Fauber Mfg. Co., Elgin, Ill.—Gasoline Motors.
Fawcus Machine Co., Pittsburg, Pa.—Gears.
Fay & Bowen Engine Co., Geneva, N. Y.—Boilers and Engines.
Fayerweather & Ladew, Inc., 91 Liberty St., New York.—Belting, Belt Dressing and Fasteners.
Federal Mfg. Co., American Trust Bldg., Cleveland, O.—Chain Belting, Couplings, etc. *See adv. page 126.*
Fewlass-Leen Brass & Iron Co., Cincinnati, O.—Brass Pipe Fittings.
Filer & Stowell Co., Ltd., Milwaukee, Wis.—Engines and Steam Pumps.
Finch Mfg. Co., Scranton, Pa.—Boilers and Hoisting Engines.
Finished Steel Co., Youngstown, O.—Shafting.
Fischer Foundry & Machine Co., Pittsburg, Pa.—Compound Engines.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.—Belt Tighteners.
Fisher, A. J., 50 So. Clinton St., Chicago, Ill.—Air Compressors.
Fisher & Davis, 1024 No. Main St., St. Louis, Mo.—Boilers and Portable Engines.
Fisher Governor Co., Marshalltown, Ia.—Pump Governors and Regulators.
Fishkill Landing Machine Co., Fishkill-on-Hudson, N. Y.—Engines.
Fitchburg Steam Engine Co., Fitchburg, Mass.—Engines.
Fitzgerald, M. J., 58 Centre St., New York.—Leather Belting.
Flagg, Stanley G., & Co., 424 No. 19th St., Philadelphia, Pa.—Pipe Fittings.
Flinn, Richard J., West Roxbury, Mass.—Steam Traps.
Flint & Walling Mfg. Co., Kendallville, Ind.—Gas or Gasoline Engines.
Florence Machine Co., Florence, Mass.—Power Pumps.
Flory, S., Mfg. Co., Bangor, Pa.—Hoisting and Portable Engines.
Foos Gas Engine Co., Springfield, O.—Gas or Gasoline Engines.
Force Feed Lubricating Co., Milwaukee, Wis.—Lubricators.
Ford, Thos. P. Co., 81 Centre St., New York.—Pump Governors, Regulators, etc.
Fore River Ship & Engine Co., Quincy, Mass.—Marine Engines.
Forest City Brass Works, Cleveland, O.—Injectors, Lubricators, etc.
Forsyth, William, & Son, West Lynn, Mass.—Gasoline Motors.
Fort Scott Foundry & Machine Co., Fort Scott, Kan.—Elevator Pumps.
Fort Wayne Foundry & Machine Co., Fort Wayne, Ind.—Gas or Gasoline Engines.
Foskett & Bishop Co., New Haven, Conn.—Steam Traps.
Foster Engineering Co., Newark, N. J.—Pump Governors, Regulators, etc.

Foster, F. W., Mfg. Co., 106 Portland St., Boston, Mass.—Grate Bars, Regulators, etc.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.—Air Compressors, Power, etc., Pumps.
Fostoria Novelty Co., Fostoria, O.—Pipe Fittings.
Fowler, Frank, Louisville, Ky.—Syphon Pumps.
Fox, John, & Co., 253 Broadway, New York.—Cast Iron Pipe.
France Packing Co., Inc., Tacony, Philadelphia, Pa.—Packing, etc. *See adv. page 107.*
Franklin Boiler Works, Troy, N. Y.—Water Tube Boilers.
Franklin Iron Works, Port Carbon, Pa.—Steam Pumps.
Freeman Foundry & Machine Works, Joplin, Mo.—Boilers and Pumps.
Freeport Plumbing & Heating Co., Freeport, Ill.—Boiler Cleaners.
Frenier, J. H., Rutland, Vt.—Power Pumps.
Frick Co., Waynesboro, Pa.—Boilers, Engines, Pumps.
Fritz, Geo. J., Foundry & Machine Co., St. Louis, Mo.—Boilers, Engines, Pumps.
Frost Mfg. Co., Galesburg, Ill.—Boilers, Engines, Pumps.
Fuller Iron Works, Providence, R. I.—Hoisting Engines.
Fuller & Johnson Mfg. Co., Madison, Wis.—Gasoline Engines.
Fulton Iron Works, San Francisco, Cal.—Boilers and Engines.
Fulton Iron Works, St. Louis, Mo.—Boilers and Engines.
Gaar, Scott & Co., Richmond, Ind.—Boilers and Portable Engines.
Gandy Belting Co., Baltimore, Md.—Canvas Belting.
Ganschow, William, 12 So. Clinton St., Chicago, Ill.—Gears.
Gardner Governor Co., Quincy, Ill.—Pumps and Pump Governors.
Garlock Packing Co., Palmyra, N. Y.—Gaskets, Packing.
Garrett Machine Works, Garrett, Ind.—Gas or Gasoline Engines.
Garry Iron & Steel Co., Cleveland, O.—Chain or Link Belting.
Gas Engine & Power Co. & Chas. L. Seabury & Co., Morris Heights, N. Y.—Boilers, Engines.
Geiser Mfg. Co., Waynesboro, Pa.—Boilers and Engines.
Gem City Boiler Co., Dayton, O.—Boilers, Feed Water Heaters.
Gem Mfg. Co., Pittsburg, Pa.—Boiler Cleaners.
Gemmer Engine & Mfg. Co., Marion, Ind.—Gas or Gasoline Engines.
General Electric Co., Schenectady, N. Y.—Locomotive Engines, Electric Pumps.
General Power Co., 81 Fulton St., New York.—Gas or Gasoline Engines.
Gibbs Engineering & Mfg. Co., Glendale, L. I., N. Y.—Tractor Trucks and Trains.
Giblin & Co., 105 Broad St., Utica, N. Y.—House Heating Boilers.
Gilbert & Barker Mfg. Co., Springfield, Mass.—Steam Pumps.
Gill, J. H., Raleigh, N. C.—Grate Bars.
Gill, John L., Jr., 204 So. 3d St., Philadelphia, Pa.—Water Tube Boilers.
Gillespie, T. A., Co., Pittsburg, Pa.—Steel Pipe.
Gilmer, L. H., & Co., 3952 Market St., Philadelphia, Pa.—Belting and Belt Hooks.
Gilmour, Robert M., Mfg. Co., 105 John St., New York.—Packing.

Glanding, James Co., 1907 No. 6th St., Philadelphia, Pa.—Packing.
Gleason-Peters Air Pump Co., 20 W. Houston St., New York.—Power Pumps.
Gleason Works, Rochester, N. Y.—Gears.
Globe Brass Works, Detroit, Mich.—Boiler Tube Cleaners, Gages, etc.
Globe Iron Works Co., Minneapolis, Minn.—Gas or Gasoline Engines.
Globe Supply Co., Cincinnati, O.—Packing.
Glover Machine Works, Marietta, Ga.—Hoisting Engines.
Goldens Foundry & Machine Co., Columbus, Ga.—Couplings, Hangers, Pulleys, etc.
Good Gas Engine Co., Dayton, O.—Gas Engines.
Goodnow, L. H. Foundry Co., Fitchburg, Mass.—Fly Wheels.
Goodrich, B. F., Co., Akron, O.—Belting, Packing.
Goodsell Packing Co., 33 So. Canal St., Chicago, Ill.—Packing.
Goodyear Rubber Co., 787 Broadway, New York.—Packing, Belting.
Goodyear Rubber Hose & Packing Co., 221 Chestnut St., Philadelphia, Pa.—Belt Dressing.
Gordon Hollow Blast Grate Co., Greenville, Mich.—Grate Bars, Furnace Grates.
Gorton & Lidgerwood Co., 96 Liberty St., New York.—House Heating Boilers.
Goubert Mfg. Co., 85 Liberty St., New York.—Feed Water Heaters, Steam Separators.
Gould Packing Co., East Cambridge, Mass.—Packing.
Goulds Mfg. Co., Seneca Falls, N. Y.—Air Compressors, Pumps. *See adv. page 115.*
Grand Rapids Gas Engine & Yacht Co., Grand Rapids, Mich.—Marine Engines.
Grant Gear Works, 6 Portland St., Boston, Mass.—Gears.
Grant Iron Works, Mahanoy City, Pa.—Air Compressors, Pumps.
Graphite Lubricating Co., Bound Brook, N. J.—Bushings.
Graton & Knight Mfg. Co., Worcester, Mass.—Leather Belting.
Graves, W. D., Browns Valley, Minn.—Oilers.
Gray & Prior Machine Co., Hartford, Conn.—Gas or Gasoline Engines.
Great Lakes Engineering Works, Detroit, Mich.—Scotch Boilers, Engines.
Great Western Mfg. Co., Leavenworth, Kan.—Pumps.
Green Fuel Economizer Co., Matteawan, N. Y.—Fuel Economizers.
Green, Tweed & Co., 17 Murray St., New York.—Packing, etc.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.—Engines, Gears, Shafting, etc. *See adv. page 106.*
Griffing, A. A., Iron Co., 449 Communipaw Av., Jersey City, N. J.—Water Columns, Exhaust Heads, etc.
Griffith & Wedge Co., Zanesville, O.—Corliss and Hoisting Engines.
Griffiths, Jas. A., 500 No. 12th St., Philadelphia, Pa.—Boiler Tube Cleaners, Ejectors, etc.
Grote Mfg. Co., Evansville, Ind.—Flue Welders.
Grundy Brass Works, 90 Sudbury St., Boston, Mass.—Brass Pipe Fittings.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.—Air Compressors, Pumps.

Guillott Metal Gasket Co., 84 Market St., Chicago, Ill.—Gaskets, Steam Engine Governors.
Gurney Heater Mfg. Co., 74 Franklin St., Boston, Mass.—House Heating Boilers.
Gutta Percha & Rubber Mfg. Co., 126 Duane St., New York.—Gaskets, Packing, Belting.
Haberkorn Engine Co., Fort Wayne, Ind.—High Speed Engines.
Haines, W. S., Co., 136 So. 4th St., Philadelphia, Pa.—Oil Filters, Regulators, etc.
Hall, C. F., & Son, Syracuse, N. Y.—Valve Reseating Machines, Valves.
Hall Steam Pump Co., Allegheny, Pa.—Steam Pumps.
Hamilton Rubber Mfg. Co., Trenton, N. J.—Packing, etc.
Hamlin & Emery Brass Co., 26 Island St., Boston, Mass.—Pipe Fittings.
Hammond Iron Works, Warren, Pa.—Boilers, Condensers, etc.
Hancock Inspirator Co., 89 Liberty St., New York.—Ejectors, Boiler Feeders, etc.
Harder Mfg. Co., Cobleskill, N. Y.—Portable Engines.
Hardie-Tynes Foundry & Machine Co., Birmingham, Ala.—Engines and Air Compressors.
Harmon Machine Co., Watertown, N. Y.—Paper Mill Pumps.
Harper & Slack Co., Chester, Pa.—Metallic Packing.
Harris, Geo. P., & Bro., 62 W. Lake St., Chicago, Ill.—Float Valves.
Harris, Wm. A. Steam Engine Co., Providence, R. I.—Engines, Power and Steam Pumps.
Harrisburg Foundry & Machine Works, Harrisburg, Pa.—Boilers and Engines. *See adv. page 126.*
Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.—Boilers, Power and Steam Pumps.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.—Pipe
Harrison Machine Works, Belleville, Ill.—Engines.
Harrison Safety Boiler Works, 17th & Clearfield Sts., Philadelphia, Pa.—Separators, Feed Water Heaters and Filters.
Hart-Parr Co., Charles City, Iowa.—Gasoline Engines.
Hartman Hide & Leather Co., St. Louis, Mo.—Belt Fasteners.
Hawley Down Draft Furnace Co., 59 Townsend St., Chicago, Ill.—Boilers, Feed Water Heaters, etc.
Hayden & Derby Mfg. Co., 89 Liberty St., New York.—Injectors, Feed Water Filters, Bilge Pumps.
Haydenville Co., Haydenville, Mass.—Gages, Valves, Power and Test Pumps.
Hayes, Harrison, Portland, Me.—Tube Expanders.
Hayes Pump & Planter Co., Galva, Ill.—Power, Steam, and Windmill Pumps.
Hazelton Boiler Co., Rutherford, N. J.—Water Tube Boilers.
Heilman Machine Works, Evansville, Ind.—Boilers and Engines.
Heine Safety Boiler Co., 704 Commonwealth Trust Bldg., St. Louis, Mo.—Water Tube Boilers.
Heisler Pumping Engine Co., Erie, Pa.—Pumping Engines.
Helios-Upton Co., Peabody, Mass.—Gages, Steam Traps.
Heller, Aller & Co., Napoleon, O.—Windmill Pumps.
Helwig Mfg. Co., St. Paul, Minn.—Pneumatic Motors.
Hench & Dromgold Co., York, Pa.—Engines.
Hendee Wire Brush Co., Milwaukee, Wis.—Belt Dressing.
Henderer's, A. L., Sons, Wilmington, Del.—Tube Expanders, Test Pumps.

Hendrick Mfg. Co., Ltd., Carbondale, Pa.—Power Pumps.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.—Corliss Engines.
Hendy, Joshua, Machine Works, San Francisco, Cal.—Hoisting Engines.
Hennebohle, Frank, South Chicago Ave. & Erie St., Chicago, Ill.—Safety Valves.
Herbertson's, J., Sons, Cadwallader, Pa.—Engines.
Hercules Float Works, Springfield, Mass.—Copper Floats.
Hercules Gas Engine Works, San Francisco, Cal.—Gas Engines.
Herendeen Mfg. Co., Geneva, N. Y.—House Heating Boilers.
Hermance Valve Co., Syracuse, N. Y.—Valves.
Herreshoff Mfg. Co., Bristol, R. I.—Marine Engines.
Herron & Bury Mfg. Co., Erie, Pa.—Air Compressors.
Hersey Mfg. Co., South Boston, Mass.—Power Pumps.
Hess-Snyder Co., Massillon, O.—Couplings, Hangers, etc., and Hand Pumps.
Hetherington & Berner, Indianapolis, Ind.—Grate Bars.
Hewes & Phillips Iron Works, Newark, N. J.—Boilers and Engines.
Hicks, E. G., Gasoline Engine Co., Minneapolis, Minn.—Gasoline Engines.
Hide Leather & Belting Co., Indianapolis, Ind.—Leather Belting.
Hill, William E., & Co., Kalamazoo, Mich.—Power Pumps.
Hill Clutch Co., Cleveland, O.—Couplings, Gears, Clutches, etc.
Hill Machine Co., Anderson, Ind.—Pumps.
Hills-McCanna Co., 128 E. Kinzie St., Chicago, Ill.—Low Water Alarms, Gages, etc.
Hinds, Thos., Malone, N. Y.—Gears, Pulleys, Shafting.
Hodgson, E. A., Laconia, N. H.—Friction Couplings.
Hoes, Robert, Malden Bridge, N. Y.—Hand Pumps.
Hoffman & Billing Mfg. Co., Milwaukee, Wis.—Brass Pipe Fittings, Valves, etc.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.—Pipe Fittings, Valves, etc.
Hogg, George A., Iron & Steel Fdy. Co., Pittsburg, Pa.—Corliss Engines.
Hohmann & Maurer Mfg. Co., Rochester, N. Y.—Gages.
Hoile Mfg. Co., Buffalo, N. Y.—Hand Pumps.
Holland, Wm., 56 So. Canal St., Chicago, Ill.—Grease Cups.
Holly Mfg. Co., Lockport, N. Y.—Power Pumps.
Holmes Metallic Packing Co., Wilkesbarre, Pa.—Packing.
Holt Mfg. Co., Stockton, Cal.—Traction Engines.
Holyoke Belting Co., Holyoke, Mass.—Leather Belting.
Holyoke Machine Co., Holyoke, Mass.—Power Pumps.
Holyoke Steam Boiler Works, Holyoke, Mass.—Boilers, Grate Bars, etc.
Homan, J. & E., 378 West Broadway, New York.—Gas or Gasoline Engines.
Home Rubber Co., Trenton, N. J.—Gaskets, Packing, etc.
Homer Brass Works, 2311 Race St., Philadelphia, Pa.—Gage Cocks.
Homestead Valve Mfg. Co., Pittsburg, Pa.—Valves.
Hooker Steam Pump Co., St. Louis, Mo.—Feed Water Heaters, Pumps.
Hooven, Owens & Rentschler Co., Hamilton, O.—Compound, Corliss and Turbine Engines.
Hopkins Machine Works, Bridgeton, R. I.—Clutches, Pulleys.

Hoppen, J. E., Belleville, N. J.—Hangers.
Hoppes Mfg. Co., Springfield, O.—Feed Water Heaters and Filters, etc.
Hopson & Chapin Mfg. Co., New London, Conn.—House Heating Boilers.
Horsburgh & Scott, Cleveland, O.—Gears.
Household Pump Co., 1237 Arch St., Philadelphia, Pa.—Power Pumps.
Houston, Stanwood & Gamble Co., Cincinnati, O.—Boilers, Engines.
Howard Iron Works, Buffalo, N. Y.—Countershafts, Couplings.
Howard & Jennings, Syracuse, N. Y.—Hand Pumps.
Howard Thermostat Co., Oswego, N. Y.—Temperature Regulators.
Howell, R. R., & Co., Minneapolis, Minn.—Boilers, Centrffugal Pumps, etc.
Hoyt Metal Co., St. Louis, Mo.—Packing.
Hubbard's, Norman Sons, 265 Water St., Brooklyn, N. Y.—Steam Pumps.
Huber Mfg. Co., Marion, O.—Boilers, Engines.
Hudson Belting Co., Worcester, Mass.—Leather Belting.
Hull, Camp Co., 127 Worth St., New York.—House Heating Boilers.
Humphrey Machine Co., Keene, N. H.—Shafting, Power, and Rotary Pumps.
Humphryes' Mfg. Co., Mansfield, O.—Power Pumps.
Hunt, C. W., Co., 45 Broadway, New York—Hoisting Engines.
Hunt, Henry C., Co., 32 Oliver St., Boston, Mass.—Leather Belting.
Hunt, Rodney, Machine Co., Orange, Mass.—Couplings, Gears, etc., Power Pumps.
Hunter, Jas., Machine Co., North Adams, Mass.—Bearings, Countershafts, Hangers, etc.
Hurlbut, W. M., Winona, Minn.—Portable Engines.
Hurst, H. L., Mfg. & Supply Co., Canton, O.—Hand Pumps.
Hyde Bros., & Co., Lewis Bldg., Pittsburg, Pa.—Water Tube Boilers.
Hydraulic Press Mfg. Co., Mt. Gilead, O.—Gas or Gasoline Engines, Pumps.
Hydro-Pneumatic Pump Co., 101 Walker St., New York.—Beer and Ale Pumps.
I. X. L. & Goshen Pump Co., Goshen, Ind.—Hand and Power Pumps.
Ide, A. L., & Sons, Springfield, Ill.—Engines, Steam Separators.
Illinois Malleable Iron Co., 32 W. Monroe St., Chicago, Ill.—Water Columns, Pipe Fittings, Pumps, etc.
Imperial Engine Co., Painted Post, N. Y.—High Speed Engines, Air Compressors.
Imperial Leather Preserver Mfg. Co., 212 So. 3d St., Philadelphia, Pa.—Belt Dressing.
Ingalls & Kendrickson, 80 Sudbury St., Boston, Mass.—House Heating Boilers.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.—Air Compressors, Centrifugal Pumps.
International Boiler Works Co., East Stroudsburg, Pa.—Boilers, Vertical Engines.
International Heater Co., Utica, N. Y.—House Heating Boilers.
International Motor Co., St. Louis, Mo.—Gas or Gasoline Engines.

International Power Vehicle Co., Stamford, Conn.—Oil Engines.
International Steam Engineering Co., Atlanta, Ga.—Condensers and Cooling Towers.
Ireson, Chas. L., 148 High St., Boston, Mass.—Packing, Belting, etc.
Iron Sanitary Mfg. Co., 52 Dearborn St., Chicago, Ill.—Pipe Fittings.
Ironton Engine Co., Ironton, O.—High Speed Engines.
Jackson, Byron, San Francisco, Cal.—Boilers, Engines, Pumps.
Jackson Flue Scraper Co., Jackson, Mich.—Flue Cleaners.
Jacobs, Chas. M., Cordage Co., Cincinnati, O.—Packing.
Jacobson Machine Mfg. Co., Warren, Pa.—Gas or Gasoline Engines.
James & Foote, 58 So. Canal St., Chicago, Ill.—Gears.
Jamieson, M. W., & Co., Warren, Pa.—Gasoline Engines,
Jarecki Mfg. Co., Erie, Pa.—Water Columns, Valves, etc.
Jarvis Engine & Machine Co., Lansing, Mich.—Safety Water Columns.
Jeanesville Iron Works Co., Jeanesville, Pa.—Condensers, Power Pumps.
Jefferson Mfg. Co., Lexington, Mass.—Pipe Fittings.
Jeffrey Mfg. Co., Columbus, O.—Couplings, Gears, Hangers, etc.
Jenkins Bros., 71 John St., New York.—Packing, Valves, etc.
Jerome & Elliott, 37 So. Canal St., Chicago, Ill.—Metallic Packing.
Jewell Belting Co., Hartford, Conn.—Belting, Belt Dressing.
Johns, H. W.-Manville Co., 100 William St., New York.—Gaskets, Packing.
Johnson, Carlyle, Machine Co., Hartford, Conn.—Friction Clutches.
Johnson, Henry, & Co., Gates Ave. & Blvd., Jersey City, N. J.—Packing.
Johnson, Isaac G., & Co., Spuyten Duyvil, N. Y.—Pipe Fittings.
Johnson Service Co., Milwaukee, Wis.—Air Compressors.
Johnson Temperature Regulating Co., 240 4th Ave., New York. Pressure Regulators.
Jones, E. D., & Sons Co., Pittsfield, Mass.—Couplings, Hangers, Pumps.
Jones & Laughlin Steel Co., Pittsburg, Pa.—Couplings, Pulleys, Hangers, etc.
Jones, W. A., Foundry & Machine Co., 142 W. North Ave., Chicago, Ill.—Shafting.
Judson Governor Co., Rochester, N. Y.—Steam Engine Governors.
June, D., & Co., Fremont, O.—Boilers, Traction Engines.
Kaestner, Chas. G., Co., 241 So. Jefferson St., Chicago, Ill.—Boilers, Engines.
Kansas City Hay Press Co., Kansas City, Mo.—Centrifugal and Power Pumps.
Katzenstein, L., & Co., 358 West St., New York.—Packing.
Keasey Pulley Co., Toledo, O.—Pulleys.
Keck, Gonnermann Co., Mt. Vernon, Ind.—Boilers and Traction Engines.
Keeler, E., Co., Williamsport, Pa.—Boilers, etc.
Kehoe, Wm., & Sons, Savannah, Ga.—Marine Engines, Pumps.
Kelley, Benj. F., & Son, 91 Liberty St., New York.—Exhaust Heads, Pumps. *See adv. page 116.*

Kelley Bros. & Spielman, Swanson cor. Moore Sts., Philadelphia, Pa.—Belt Fasteners.
Kellogg Bros., Jacksonville, Ill.—Blow Off Tanks.
Kellogg-Mackey-Cameron Co., Lake & Franklin Sts., Chicago, Ill.—House Heating Boilers.
Kelly, O. S., Co., Springfield, O.—Traction Engines.
Kelly, O. S., Western Mfg. Co., Iowa City, Ia.—Gas or Gasoline Engines.
Kelly & Jones Co., Greensburg, Pa.—Water Columns, Pipe Fittings, etc.
Kelly Foundry & Machine Co., Goshen, Ind.—Grate Bars, Couplings, Hangers, etc.
Kelton-Bruce Mfg. Co., 9-13 Franklin St., Salem, Mass.—Rawhide Belting.
Kendall, Edw., & Sons, Cambridgeport, Mass.—Boilers, Hoisting Engines.
Kennedy Valve Mfg. Co., 57 Beekman St., New York.—Valves.
Kenney & Co., Scottdale, Pa.—Boilers, Engines.
Kensington Engine Works, Ltd., 245 No. Broad St., Philadelphia, Pa.—Boilers, Engines, Pumps.
Keuffel & Esser Co., 127 Fulton St., New York.—Planimeters.
Keystone Boiler & Radiator Co., Huntington, Pa.—House Heating Boilers.
Keystone Brass Co., Erie, Pa.—Oil Cups, Valves.
Keystone Engine & Machine Works, 5th & Buttonwood Sts., Philadelphia, Pa.—Exhaust Heads, Power Pumps.
Keystone Gas Engine Co., New Brighton, Pa.—Gas or Gasoline Engines.
Keystone Lubricating Co., 20th St., cor. Allegheny Ave., Philadelphia, Pa.—Belt Dressing.
Kieley & Mueller, 34 W. 13th St., New York.—Regulators, Steam Traps, etc.
Kilburn, Lincoln, & Co., Fall River, Mass.—Hangers, Pulleys.
King, Chas. B., Co., Detroit, Mich.—Gas or Gasoline Engines.
King, Quick & Gerber, Paterson, N. J.—Gasoline Motors.
Kingsford Foundry & Machine Works, Oswego, N. Y.—Boilers, Engines, Pumps.
Kingsland Mfg. Co., St. Louis, Mo.—Traction Engines.
Kinsey & Mahler Co., Peoria, Ill.—Brass Fittings.
Kinsley Mfg. Co., Bridgeport, Conn.—Whistles.
Kitts Mfg. Co., Oswego, N. Y.—Water Columns, Pump Governors, etc.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.—Couplings, Hangers, Pulleys, etc.
Kling Bros., 287 Hawthorne Ave., Chicago, Ill.—Boilers, Gas or Gasoline Engines.
Klipfel & Thomas Co., 74 W. Lake St., Chicago, Ill.—Regulators, Steam Traps, etc.
Knapp Mfg. Co., 24 Frankfort St., New York.—Air Compressors, Hand, etc., Pumps.
Knowles Steam Pump Works, 114 Liberty St., New York.—Power and Steam Pumps.
Knowlton & Kelly, Troy, N. Y.—Engines, Power and Steam Pumps.
Knowlton, G. W., Rubber Co., 29 Broad St., Boston, Mass.—Packing, etc.
Krogh Mfg. Co., San Francisco, Cal.—Engines, Centrifugal Pumps.

Kroschell Bros. Co., 59 E. Erie St., Chicago, Ill.—Boilers and Feed Water Heaters.
Kuhns Bros., Dayton, O.—Pipe Fittings.
Kumberger & Vreeland, 33 Sullivan St., New York.—Gas or Gasoline Engines, Gears, etc.
Kutztown Foundry & Machine Co., Kutztown, Pa.—Grate Bars.
La Favorite Rubber Mfg. Co., Hawthorne, N. J.—Packing, etc.
La France Fire Engine Co., Elmira, N. Y.—Power Pumps.
Lagonda Mfg. Co., Springfield, O.—Boiler Tube Cleaners.
Lahman, W. H., 59 E. Indiana St., Chicago, Ill.—Grate Bars, Grates.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.—Air Compressors, Power Pumps.
Lake City Engineering Co., Erie, Pa.—Marine Engines, Pumps.
Lake Shore Rubber Co., Erie, Pa.—Packing, etc.
Lambert Gas & Gasoline Engine Co., Anderson, Ind.—Gas or Gasoline Engines.
Lambert Hoisting Engine Co., Newark, N. J.—Hoisting Engines, Air Compressors.
Lance, Geo. A., Watertown, N. Y.—Centrifugal Pumps.
Lane & Bodley Co., Cincinnati, O.—Engines, Pumps.
Lang, John B., Ithaca, N. Y.—Boilers, Traction Engines.
Lang & Goodhue Mfg. Co., Burlington, Vt.—Steam Pumps.
Lang, J., Electric Co., 176 E. Indiana St., Chicago, Ill.—Water Gages.
Lang's, John S., Son & Co., 4 Fletcher St., New York.—Syphon Pumps.
Lansing Boiler & Engine Works, Lansing, Mich.—Boilers, Portable Engines.
Lansing Motor & Pump Co., Lansing, Mich.—Gasoline Motors, Windmill Pumps.
Larzelere Machine Co., Williamsport, Pa.—Boilers, Engines, Power Pumps.
Lawler Water Feed & Damper Regulator Co., 181 Mercer St., New York.—Feed Water Heaters, Regulators, etc.
Lawrence Cordage Works, 46 South St., New York.—Packing.
Lawrence Machine Co., Lawrence, Mass.—Power Pumps.
Lazier Gas Engine Co., Buffalo, N. Y.—Gas or Gasoline Engines.
Learmonth, Robert, Buffalo, N. Y.—Feed Water Heaters and Purifiers. *See adv. page 118.*
Leather Preserver Mfg. Corporation, 31 Monroe St., Chicago, Ill.—Belt Dressing.
Leavitt Machine Co., Orange, Mass.—Valve Reseating Machines.
Lee & Hoff Mfg. Co., St. Paul, Minn.—Tube Expanders.
Lee Mfg. Co., Port Huron, Mich.—Injectors, Ejectors, Boiler Feeders.
Lee, Thomas, Cincinnati, O.—Exhaust Heads.
Leffel, Jas., & Co., Springfield, O.—Boilers, Engines, Pumps.
Lehigh Foundry Co., Fullerton, Pa.—Fly Wheels.
Lehigh Valley Brass Works, South Bethlehem, Pa.—Gage Cocks.
Leland & Faulconer, 480 Trombly Av., Detroit, Mich.—Gasoline Motors.
Leschen, A., & Sons Rope Co., St. Louis, Mo.—Packing, Transmission Rope.
Libby Mfg. Co., 147 Varick St., New York.—Packing, Valves.
Liberty Mfg. Co., Pittsburg, Pa.—Boiler Tube Cleaners.
Liddell Co., Charlotte, N. C.—Boilers, Engines, Couplings.

Lidgerwood Mfg. Co., 96 Liberty St., New York.—Boilers, Engines.
Lima Locomotive & Machine Co., Lima, O.—Locomotive Engines.
Lindgren, Mahan, Fire Apparatus Works, 793 W. Lake St., Chicago, Ill.—Power and Steam Pumps.
Link Belt Engineering Co., Nicetown, Philadelphia, Pa.—Couplings, Hangers, Pulleys, etc.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.—Water Tube Boilers, Steam Specialties.
Link, E. M., Machinery Co., Erie, Pa.—Boilers, Engines.
Lippincott, A. C., Scranton, Pa.—Steam Engine Indicators.
Liquid Carbonic Co., Michigan & Wells Sts., Chicago. Ill.—Beer and Ale Pumps.
Litchfield Foundry & Machine Works, Litchfield, Ill.—Hoisting Engines.
Locke Regulator Co., Salem, Mass.—Pump Governors, Regulators, etc.
Locke Steel Belt Co., Bridgeport, Conn.—Chain Belting.
Lombard Governor Co., 36 Whittier St., Boston, Mass.—Pump Governors, Grate Bars, etc.
Lombard Iron Works & Supply Co., Augusta, Ga.—Boilers.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.—Water Columns, Steam Traps, etc.
Loomis, Frank W., 403 Canal St., New York.—Gas or Gasoline Engines.
Lovegrove & Co., 143 No. 3d St., Philadelphia, Pa.—Steam Pumps.
Lowell Model Co., Chelmsford, Mass.—Gas or Gasoline Engines.
Lozier Motor Co., 1 Broadway, New York.—Gasoline Motors.
Lubron Mfg. Co., 38 India St., Boston, Mass.—Packing.
Lucas, C. O., & Co., Greenville, O.—Boilers, Power Pumps.
Ludlow Valve Mfg. Co., Troy, N. Y.—Valves.
Lunkenheimer Co., Cincinnati, O.—Lubricators, Valves, etc. *See adv. page 111.*
Lyman, W. C., 49 Michigan St., Chicago, Ill.—Exhaust Heads.
Lynch, Edward, & Co., 19 So. Canal St., Chicago, Ill.—Leather Belting.
Lyons Engine Co., Lyons, Mich.—Gasoline Engines.
McCambridge & Co., Ltd., 523 Cherry St., Philadelphia, Pa.—Pipe Fittings.
McClave-Brooks Co., Scranton, Pa.—Grate Bars, Stokers, etc.
McConnell Asbestos Co., Ltd., 265 Water St., Pittsburg, Pa.—Packing.
McCrea, James, & Co., 67 W. Washington St., Chicago, Ill.—Flue Cleaners, Steam Traps.
McDonald, A. Y., & Morrison Mfg. Co., Dubuque, Ia.—Pipe Fittings, Power Pumps.
McDowell & Co., Pittsburg, Pa.—Steam Pumps.
McEwen Bros., Wellsville, N. Y.—Portable Engines.
McGowan, John H. Co., Cincinnati, O.—Exhaust Heads, Separators, Pumps.
McIntosh, Seymour, & Co., Auburn, N. Y.—Blowing Engines.
McKay, Jas., & Co., McKees Rocks, Pa.—Chain or Link Belting.
McKeown, H. J., Cincinnati, O.—Hoisting Engines. *See adv. page 118.*

McKiernan Drill Co., 170 Broadway, New York.—Air Compressors, Pumps.
McLain, J. H., Co., Canton, O.—House Heating Boilers.
McLean, John, 440 Water St., New York.—Gate Valves.
McLeod Co., 95 Liberty St., New York.—Pipe Fittings.
McMahon & Co., Worcester, Mass.—Friction Clutches.
McMurray, C. F., Co., Troy, N. Y.—Hangers, Pulleys, etc.
McNab & Harlin Mfg. Co., 56 John St., New York.—Pipe Fittings, Valves, etc.
McNeil, Jas., & Bro. Co., 29th & Railroad Sts., Pittsburg, Pa.—Riveted Pipe.
McRae & Roberts Co., Detroit, Mich.—Gages, Lubricators, etc.
McSwegan, F., & Sons, 120 Liberty St., New York.—Steam Pumps.
Mackay Mfg. Co., Newark, N. J.—Valves.
Mackintosh, Hemphill, & Co., Ltd., Pittsburg, Pa.—Engines.
Macleod, Walter, & Co., Cincinnati, O.—Steam Pumps.
Macomber & Whyte Rope Co., 21 So. Canal St., Chicago, Ill.—Transmission Rope.
Maddock & Herscheli, Princeton, Ind.—Flue Welders.
Magee, Alonzo H., 106-108 Beekman St., New York.—Gaskets, Automatic Valves.
Magee Furnace Co., 32 Union St., Boston, Mass.—House Heating Boilers.
Main Belting Co., 1233 Carpenter St., Philadelphia, Pa.—Canvas Belting.
Malleable Iron Fittings Co., Branford, Conn.—Pipe Fittings.
Manchester Mfg. Co., North Manchester, Ind.—Boiler Cleaners.
Manhattan Rubber Mfg. Co., 18 Vesey St., New York.—Gaskets and Packing.
Manistee Iron Works Co., Manistee, Mich.—Boilers, Engines, Pumps.
Mann-McCann Co., 1210 Fisher Bldg., Chicago, Ill.—Boiler Tube Cleaners.
Mansfield Engineering Co., Mansfield, O.—Engines, Boilers, Pumps.
Manufacturers' Governor Co., Hartford, Conn.—Steam Engine Governors.
Manzel Bros., Buffalo, N. Y.—Lubricators.
Marine Engine & Machine Co., 80 Broadway, New York.—Oil Engines.
Marine Iron Works, Clyburn & Southport Aves., Chicago, Ill. Boilers and Engines.
Marinette Iron Works Mfg. Co., Marinette, Wis.—Gas or Gasoline Engines.
Marion Mfg. Co., Marion, O.—Engines.
Marsh, Jas. P., & Co., 224 Washington St., Chicago, Ill.—Gages, Steam Traps, etc.
Marshutz & Cantrell, San Francisco, Cal.—Portable Engines.
Marston, I. G., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 118.*
Martin Grate Co., 281 Dearborn St., Chicago, Ill.—Shaking Grates.
Maryland Steel Co., Marine Dept., Baltimore, Md.—Marine and Water Tube Boilers.
Maslin, John, & Son, 163 First St., Jersey City, N. J.—Centrifugal, Power, etc., Pumps.

Mason Regulator Co., 158 Summer St., Boston, Mass.—Pump Governors, Regulators, Steam Pumps.
Mason, Volney W., & Co., Providence, R. I.—Friction Couplings and Pulleys.
Massillon Engine & Thresher Co., Massillon, O.—Traction Engines.
Massillon Iron & Steel Co., Massillon, O.—Cast Iron Pipe.
Mast, Foos Co., Springfield, O.—Hand and Power Pumps.
Maud S. Windmill & Pump Co., Lansing, Mich.—Windmill Pumps.
Maurer, Labadie & Co., South Bend, Ind.—Boiler Tube Cleaners and Ejectors.
May Bros., Galesburg, Ill.—Power and Steam Pumps.
Maypole Bros., 60 So. Canal St., Chicago, Ill.—Exhaust Heads.
Means & Fulton Iron Works, Birmingham, Ala.—Tubular Boilers, Riveted Pipe.
Mechanical Rubber Co., Cleveland, O.—Packing.
Mechanics' Iron Foundry Co., 38 Kemble St., Boston, Mass.—Grate Bars.
Mecklenburg Iron Works, Charlotte, N. C.—Boilers, Engines, Pumps.
Medart Patent Pulley Co., St. Louis, Mo.—Couplings, Hangers, Pulleys, etc.
Meier's, Joseph, Sons, 291 Market St., Newark, N. J.—Leather Belting.
Mellor, L. Bancroft, 14 So. 4th St., Philadelphia, Pa.—Boiler Tube Calipers.
Mercer Rubber Co., Trenton, N. J.—Packing.
Mershon Patent Shaking Grate Works, 1203 Filbert St., Philadelphia, Pa.—Grate Bars, etc.
Merwarth Metallic Gasket Co., 32 Broadway, New York.—Gaskets and Packing.
Messinger Mfg. Co., Tatamy, Pa.—Portable Engines.
Messmer, Ferd. Mfg. Co., 2702 So. 7th St., St. Louis, Mo.—Gears.
Mesta Machine Co., Pittsburg, Pa.—Engines and Gears.
Metropolis Rubber Co., 116 Bleecker St., New York.—Packing.
Mianus Motor Works, Mianus, Conn.—Gas or Gasoline Engines.
Michigan Brass & Iron Works, Detroit, Mich.—Valves.
Michigan Heater Co., Big Rapids, Mich.—Cast Iron Pipe.
Michigan Lubricator Co., Detroit, Mich.—Gages, Lubricators.
Michigan Sprocket Chain Co., Detroit, Mich.—Chain or Link Belting.
Middletown Machine Co., Middletown, O.—Gas or Gasoline Engines.
Mietz, August, 128 Mott St., New York.—Engines, Power, etc., Pumps.
Miller Improved Gas Engine Co., Springfield, O.—Gas or Gasoline Engines.
Milwaukee Brass Mfg. Co., Milwaukee, Wis.—Brass Pipe Fittings.
Milwaukee Leather Belting Co., Milwaukee, Wis.—Leather Belting.
Mineralized Rubber Co., Inc., 18 Cliff St., New York.—Gaskets, Packing, etc.

Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.—Boilers, Engines and Power Transmission Appliances.
Missouri Belting Co., St. Louis, Mo.—Leather Belting.
Model Gas Engine Co., Auburn, Ind.—Gas or Gasoline Engines.
Model Heating Co., 716 Arch St., Philadelphia, Pa.—House Heating Boilers.
Moline Pump Co., Moline, Ill.—Gas or Gasoline Engines, Power, etc., Pumps.
Monash-Younker Co., 203 So. Canal St., Chicago, Ill.—Separators, Steam Traps, etc.
Monighan Machine Works, 813 Carroll Av., Chicago, Ill.—Hoisting Engines.
Monitor Water Purifier Co., Lansing, Mich.—Feed Water Filters.
Montgomery Bros., 48 No. Front St., Philadelphia, Pa.—Packing and Belt Dressing.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.—Hangers, Pulleys, Pumps, etc.
Morgan & Co., 40 Dearborn St., Chicago, Ill.—Air Automatic Valves.
Morgan & Wright, 331 W. Lake St., Chicago, Ill.—Gaskets and Packing.
Morris County Machine & Iron Co., Dover, N. J.—Hoisting Engines, Steam Pumps.
Morris, I. P., Co., Philadelphia, Pa.—Marine Engines.
Morris Machine Works, Baldwinsville, N. Y.—Engines, Power, etc., Pumps.
Morse, Andrew J., & Son, 138 Congress St., Boston, Mass.—Air, Power and Steam Pumps.
Morse Chain Co., Trumansburg, N. Y.—Transmission Chains.
Morse, Williams & Co., Frankford Ave. & Shockamaxon St., Philadelphia, Pa.—Hydraulic Engines, Gears.
Mosher Water Tube Boiler Co., 1 Broadway, New York.—Boilers and Steam Separators.
Mott, J. L. Iron Works, 88 Beekman St., New York.—House Heating Boilers, Feed Water Heaters, etc.
Motter, Geo. F., & Sons, York, Pa.—Boilers, Engines, Pumps.
Mueller, H., Mfg. Co., Decatur, Ill.—Brass Fittings.
Mulford Heater Co., Galva, Ill.—House Heating Boilers.
Mundy, J. S., 22 Prospect St., Newark, N. J.—Boilers, Engines and Centrifugal Pumps.
Munson, Chas., Belting Co., 40 So. Canal St., Chicago, Ill.—Leather Belting and Belt Dressing.
Murray Iron Works Co., Burlington, Ia.—Boilers, Engines, Pumps.
Murray & Tregurtha Co., South Boston, Mass.—Water Tube Boilers, Gas or Gasoline Engines.
Myers, F. E., & Bro., Ashland, O.—Hand, Power, etc., Pumps.
Nadig, C. H., & Bro., Mfg. Co., Allentown, Pa.—Hoisting Engines.
Nagle Engine & Boiler Works, Erie, Pa.—Boilers and Engines.
Nason Mfg. Co., 71 Fulton St., New York.—Feed Water Heaters, Regulators, etc.
Nathan Mfg. Co., 92 Liberty St., New York.—Ejectors, Injectors, Lubricators, etc.
National Brass & Metal Co., Minneapolis, Minn.—Copper Floats and Oil Cups.

National Engineering Co., Saginaw, Mich.—Gas or Gasoline Engines.
National Foundry & Machine Co., Louisville, Ky.—Air Compressors, Power, etc., Pumps.
National Gear Wheel & Foundry Co., Allegheny, Pa.—Gas or Gasoline Engines, Gears, etc.
National India Rubber Co., Bristol, R. I.—Gaskets and Packing.
National Machine Tool Co., Cincinnati, O.—Speed Transmission Devices.
National Meter Co., 84-86 Chambers St., New York.—Gas or Gasoline Engines.
National Oil Burner & Equipment Co., Holland Bldg., St. Louis, Mo.—Fuel Economizers.
National Pipe Bending Co., New Haven, Conn.—Feed Water Heaters and Bent Pipe.
National Steam Pump Co., Upper Sandusky, O.—Steam Pumps.
National Tube Co., Pittsburg, Pa.—Pipe.
National Water Tube Boiler Co., New Brunswick, N. J.—Water Tube Boilers and Grate Bars.
National Wooden Pipe Co., Los Angeles, Cal.—Wooden Pipe.
Naugatuck Mfg. Co., Naugatuck, Conn.—Copper Floats and Gages.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philadelphia, Pa.—Marine Boilers and Engines.
Neemes Bros., Troy, N. Y.—Grate Bars and Shaking Grates.
Nelson, Chas., 439 E. 10th St., New York.—Cast Iron Pipe, Valves, etc.
Nelson, N. O., Mfg. Co., 8th & St. Charles Sts., St. Louis, Mo.—Wooden Hand Pumps.
Nelson Valve Co., Wyndmoor, Pa.—Valves.
Neustadt-Perry Co., 826 So. 18th St., St. Louis, Mo.—Gas or Gasoline Engines.
Nevin & Wetmore Iron Works, Lowville, N. Y.—Centrifugal, Power and Steam Pumps.
New Bedford Boiler & Machine Co., New Bedford, Mass.—Boilers, Valves, etc.
New Birdsall Co., Auburn, N. Y.—Engines.
New Britain Machine Co., New Britain, Conn.—High Speed Engines. *See adv. page 107.*
Newburgh Ice Machine & Engine Co., Newburgh, N. Y.—Compound and Corliss Engines.
New England Roller Grate Co., Springfield, Mass.—Grate Bars.
New Era Gas Engine Co., Dayton, O.—Gas or Gasoline Engines.
New Jersey Asbestos Co., Camden, N. J.—Gaskets and Packing.
New Jersey Foundry & Machine Co., 9 Murray St., New York. Tubular Boilers, Chain Belting, etc.
New Process Rawhide Co., Syracuse, N. Y.—Gears.
New York Air Brake Co., 66 Broadway, N. Y.—Air Compressors, Power, etc., Pumps.
New York Belting & Packing Co., 25 Park Place, New York.—Gaskets, Belting.
New York Grate Bar Co., Jersey City, N. J.—Grate Bars.
New York Kerosene Oil Engine Co., 31 Burling Slip, New York.—Oil Engines.

New York Leather Belting Co., 8 Ferry St., New York.—Leather Belting and Dressing.
New York Rubber Co., 84 Reade St., New York.—Gaskets, Packing, etc.
New York Safety Steam Power Co., 113 Liberty St., New York.—Water Tube Boilers and Engines.
Nichols, D. M., 2 Gouverneur Slip, New York.—Marine Boilers, Engines, etc.
Nichols & Langworthy Machine Co., Hope Valley, R. I.—Boilers and High Speed Engines.
Nichols & Shepard Co., Battle Creek, Mich.—Engines.
Nicholson & Co., Rankin Station, Pa.—Chain or Link Belting.
Nolte Brass Co., Springfield, O.—Gages, Valves and Whistles.
Nordberg Mfg. Co., Milwaukee, Wis.—Condensers, Engine Governors, etc.
Nordyke & Marmon Co., Indianapolis, Ind.—Portable Engines.
Northern Engineering Works, Detroit, Mich.—Gas or Gasoline Engines.
North Star Mfg. Co., Minneapolis, Minn.—Gasoline Engines.
Northwest Thresher Co., Stillwater, Minn.—Portable Engines.
Northwestern Iron Works, Seattle, Wash.—Gasoline Engines.
Norton, H. M., 2d & Northampton Sts., Easton, Pa.—House Heating Boilers.
Norton & Cole Machinery Co., Cincinnati, O.—Hoisting and Portable Engines.
Norwalk Iron Works Co., South Norwalk, Conn.—Belt Tighteners, Air Compressors. *See adv. page 116.*
Norwich Belt Mfg. Co., Norwich, Conn.—Leather Belting, Hydraulic Pumps.
Norwood Engineering Co., Florence, Mass.—Power and Steam Pumps.
Nott, W. S., Co., Minneapolis, Minn.—Leather Belting.
Novelty Mfg. Co., Omaha, Neb.—Float Valves.
Noye Mfg. Co., Buffalo, N. Y.—Engines, Power and Steam Pumps.
Nusbaum, F. A., Dayton, O.—Low Water Alarms, Oil Filters. *See adv. page 117.*
Nuttall, R. D., Co., Pittsburg, Pa.—Gears.
Oakes, William L., Decatur, Ill.—Boilers, Gas Engines, Steam Pumps.
Oesterlein Machine Co., Cincinnati, O.—Clutches, Pulleys, etc.
Ofeldt, F. W., & Sons, Foot of W. 25th St., Brooklyn, N. Y.—Marine Boilers, Gas or Gasoline Engines.
Ohio Brass Co., Mansfield, O.—Gages, Lubricators, etc.
Ohio Brass & Iron Mfg. Co., Cleveland, O.—Radiator Valves.
Ohio Electric Works, Cleveland, Ohio.—Gas or Gasoline Engines.
Ohio Injector Co., Wadsworth, O.—Ejectors and Injectors.
Ohio Machine Co., Middleport, O.—Marine Engines.
Ohio Motor Co., Sandusky, O.—Gasoline Motors.
Oil City Boiler Works, Oil City, Pa.—Boilers and Engines.
Oil Well Supply Co., Pittsburg, Pa.—Boilers, Valves, etc.
Olds Motor Works, Detroit, Mich.—Gas and Gasoline Engines.
Olin Gas Engine Co., Buffalo, N. Y.—Marine Engines.
Olney & Warrin, 36 Dey St., New York.—Tubular Boilers, Engines, Steam Pumps, etc.
Olsen, Tinius, & Co., 500 No. 12th St., Philadelphia, Pa.—Test Pumps.

Oneida Community, Ltd., Niagara Falls, N. Y.—Chain or Link Belting.
Oneida Steel Pulley Co., Oneida, N. Y.—Hangers, Pulleys, etc.
Oram, John S., 160-172 Coe St., Cleveland, O.—Power and Steam Pumps.
Oswego Tool Co., Oswego, N. Y.—Boiler Tube Expanders.
Otto Gas Engine Works, 33d & Walnut Sts., Philadelphia, Pa. Gas and Oil Engines.
Ottumwa Iron Works, Ottumwa, Ia.—Hoisting Engines.
Oxford Mfg. Co., Oxford, Pa.—Gasoline Motors.
Pacific Iron Works, Bridgeport, Conn.—Hoisting Engines.
Page Belting Co., Concord, N. H.—Leather Belting.
Palmer, N., & Co., Bridgeport, Conn.—Leather Belting and Belt Dressing.
Palmer Bros., Mianus, Conn.—Gas or Gasoline Engines.
Pardee, C., Works, Perth Amboy, N. J.—Shafting.
Patterson, Frank L., & Co., 26 Cortlandt St., New York.—Exhaust Heads, Separators, Power Pumps.
Patterson Regulator Co., Baltimore, Md.—Regulators.
Pawling & Harnischfeger, Milwaukee, Wis.—Hoisting Engines.
Payne Co., Elmira, N. Y.—Engines.
Pease Engine & Machine Works, Goshen, Ind.—Gasoline Engines.
Peck Bros. & Co., New Haven, Conn.—Beer and Ale Pumps.
Pedrick & Ayer Co., Plainfield, N. J.—Boiler Tube Cleaners, Air Compressors.
Peerless Belt Lacing Machine Co., Swanson & Moore Sts., Philadelphia, Pa.—Belt Lacing Machines. *See adv. page 119.*
Peerless Belting Co., Buffalo, N. Y.—Leather Belting.
Peerless Lubricant Mfg. Co., 29 West St., New York.—Belt Dressing.
Peerless Motor Co., Lansing, Mich.—Gasoline Engines.
Peerless Rubber Mfg. Co., 16 Warren St., New York.—Gaskets, Packing, Belting. *See adv. page 110.*
Pelton Water Wheel Co., 127 Main St., San Francisco, Cal.—Riveted Pipe and Water Motors.
Penberthy Injector Co., Detroit, Mich.—Ejectors, Injectors and Jet Pumps.
Penn Engineering Co., 312 Cherry St., Philadelphia, Pa.—Automatic and Radiator Valves.
Pennsylvania Carbon-Graphite Co., Scranton, Pa.—Belt Dressing.
Pennsylvania Iron Works Co., 50th St. & Lancaster Ave., Philadelphia, Pa.—Gas or Gasoline and Marine Engines.
Pennsylvania Rubber Co., Jeannette, Pa.—Packing, Belting.
Percy, Chas. W., 212 Summer St., Boston, Mass.—Marine Engines.
Perkes, Chas., 627 Arch St., Philadelphia, Pa.—Valves, Air and Hand Pumps.
Perkins, B. F., & Son, Holyoke, Mass.—Ejectors, Power Transmission Appliances. *See adv. page 121.*
Perkins Launch & Motor Co., Gloucester, Mass.—Gas or Gasoline Engines.
Perkins Windmill & Axe Co., Mishawaka, Ind.—Hand, Power and Steam Pumps.
Phelps & Bigelow Windmill Co., Kalamazoo, Mich.—Steam Pumps.

Phenix Metallic Packing Co., 7 So. Jefferson St., Chicago, Ill. Automatic Lubricators.
Philadelphia Gear Works, 7th & Cherry Sts., Philadelphia, Pa.—Gears.
Phillips Co., 164 High St., Boston, Mass.—Gages, Lubricators.
Phoenix Iron Works Co., Meadville, Pa.—Boilers and Engines.
Phoenix Mfg. Co., Eau Claire, Wis.—Throttling Engines.
Pickering Governor Co., Portland, Conn.—Steam Engine Governors.
Pierce, Wm. B., Co., Buffalo, N. Y.—Boiler Tube Cleaners.
Pierce-Crouch Engine Co., New Brighton, Pa.—Gas or Gasoline Engines.
Pierce Engine Co., Racine, Wis.—Gasoline Engines.
Pierce Well Engineering & Supply Co., 136 Liberty St., New York.—Artesian and Deep Well Pumps.
Pilley Packing & Flue Brush Mfg. Co., St. Louis, Mo.—Boiler Tube Cleaners, Packing, etc.
Pilling Air Engine Works, Bucyrus, O.—Pneumatic Motors.
Pioneer Brass Works, Indianapolis, Ind.—Metallic Packing, Brass Fittings.
Pittsburg Feed Water Heater Co., Carnegie Bldg., Pittsburg, Pa.—Feed Water Heaters.
Pittsburg Filter & Water Heater Co., Pittsburg, Pa.—Feed Water Filters.
Pittsburg Gage & Supply Co., Pittsburg, Pa.—Exhaust Heads, Gages, etc. *See adv. page 113.*
Pittsburg Gas Engine Co., Pittsburg, Pa.—Gas Engines.
Pittsburg Pulley Co., Pittsburg, Pa.—Pulleys.
Pittsburg Steam Jacket Lubricator Co., Pittsburg, Pa.—Sight Feed Lubricators.
Pittsburg Steel Shafting Co., Rankin Station, Pa.—Shafting.
Pittsburg Valve, Foundry & Construction Co., Pittsburg, Pa.—Cast Iron Pipe Fittings, Valves, Steam Pumps.
Playford Stoker Co., Cleveland, O.—Grate Bars and Stokers.
Pleuger & Henger Mfg. Co., St. Louis, Mo.—Brass Pipe Fittings and Gate Valves.
Pneumatic Engineering Co., 128 Broadway, New York.—Power and Steam Pumps.
Pohl, George D., Mfg. Co., Vernon, N. Y.—Gasoline Engines.
Pollock, Wm. B., Co., Youngstown, O.—Water Tube Boilers and Riveted Pipe.
Poole Engineering & Machine Co., Baltimore, Md.—Couplings, Hangers, etc.
Porter, H. K., Co., Pittsburg, Pa.—Locomotive Engines.
Porter, J. E., Co., Ottawa, Ill.—Beer and Ale, Power, etc., Pumps.
Port Huron Engine & Thresher Co., Port Huron, Mich.—Traction Engines.
Portland Co., Inc., Portland, Me.—Boilers, Engines and Vacuum Pumps.
Post, E. L., & Co., 50 Cliff St., New York.—Belt Dressing.
Powell, Wm., Co., Cincinnati, O.—Gages, Lubricators and Oil Pumps.
Power Specialty Co., Buffalo, N. Y.—Engines, Water Motors.
Powers Regulator Co., 40 Dearborn St., Chicago, Ill.—Regulators.
Pratt & Cady Co., Hartford, Conn.—Gages and Valves.
Prentice, L. H., Co., 24 Sherman St., Chicago, Ill.—Exhaust Heads.

Presbrey, C. H., & Co., Sterling, Ill.—Power and Steam Pumps.
Prescott Steam Pump Co., Milwaukee, Wis.—Steam Pumps.
Prouty Gasoline Locomotive Co., Ltd., Lansing, Mich.—Gasoline Engines.
Providence Engineering Works, Providence, R. I.—Engines.
Providence Steam Trap Co., Providence, R. I.—Grease Extractors, Steam Traps, etc.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.—House Heating Boilers, Gas or Gasoline Engines.
Pulling, James G., & Co., Columbus, O.—Centrifugal, Power, etc., Pumps.
Pulsometer Steam Pump Co., 135 Greenwich St., New York.—Power, Steam, etc., Pumps. *See adv. page 119.*
Pulverized Coal Stoker Co., 31 Burling Slip, New York.—Stokers.
Purity Oil Filter Mfg. Co., Pittsburg, Pa.—Oil Filters.
Pusey & Jones Co., Wilmington, Del.—Boilers, Engines, Power, etc., Pumps.
Putnam Foundry & Machine Co., Putnam, Conn.—House Heating Boilers.
Putnam Machine Co., Fitchburg, Mass.—Automatic Cut Off Engines.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.—Packing, Belting, etc.
Quaker Mfg. Co., Chicago Heights, Ill.—Cast Iron Pipe Fittings.
Queen City Brass & Iron Works, Cincinnati, O.—Brass Pipe Fittings, Valves, etc.
Queen City Engineering Co., Buffalo, N. Y.—Tubular Boilers, Marine Engines, Power, etc., Pumps.
Quimby, Wm. E., Inc., 86 Liberty St., New York.—Centrifugal, Power, etc., Pumps.
Quimby Engineering Co., 913 Ridge Ave., Philadelphia, Pa.—Gages.
Quincy Engine Works, Quincy, Ill.—Engines, Pulleys and Electric Pumps.
Quincy Valve & Mfg. Co., Quincy, Ill.—Valve Reseating Machines, Valves, etc.
Quintard Iron Works, 742 E. 12th St., New York.—Tubular and Marine Boilers and Engines.
Racine Engine & Iron Works, Racine, Wis.—Boilers, Engines and Steam Pumps.
Rahmann, Geo., & Co., 31 Ferry St., New York.—Leather Belting.
Rand Drill Co., 128 Broadway, New York.—Portable Engines, Air Compressors, etc. *See adv. page 122.*
Randle Machinery Co., Cincinnati, O.—Tubular Boilers and Injectors.
Raniville, F., Grand Rapids, Mich.—Leather Belting.
Rarig Engineering Co., Columbus, O.—Boilers, Engines, Air Compressors, etc.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.—Tubular Boilers and Engines.
Reading Foundry Co., Reading, Pa.—Cast Iron Pipe.
Reagan Grate Bar Co., 209 No. Front St., Philadelphia, Pa.—Grate Bars and Indicators.
Red Cross Mfg. Co., Bluffton, Ind.—Hand and Windmill Pumps.

Red Jacket Mfg. Co., Davenport, Ia.—Hand, Power, etc., Pumps.
Reed Mfg. Co., Erie, Pa.—Oil Cups.
Rees, Jas., & Sons Co., Pittsburg, Pa.—Boilers, Engines and Steam Pumps.
Reeves & Co., Columbus, Ind.—Boilers and Engines.
Reeves Engine Co., Trenton, N. J.—Engines.
Reeves Pulley Co., Columbus, Ind.—Pulleys, Countershafts.
Regal Packing Co., 1402 Monadnock Blk., Chicago, Ill.—Metallic Packing.
Regester's, J., Sons Co., Baltimore, Md.—Valves.
Reilley Bros., 324 W. 41st St., New York.—Painter's Oil Pumps.
Reilly & Fearon, 1154 No. 3d St., Philadelphia, Pa.—Boilers and Engines.
Reliable Mfg. Co., Pittsburg, Pa.—Gages and Valves.
Reliable Water Gauge Co., 1616 Pine St., St. Louis, Mo.—Water Gages.
Reliance Gauge Column Co., Cleveland, O.—Water Columns, Steam Traps, etc. *See adv. page 117.*
Reliance Machine & Tool Works, 3323 Franklin Ave., St. Louis, Mo.—Air Compressors, Steam, etc., Pumps.
Remington Machine Co., Wilmington, Del.—Corliss Engines.
Rensselaer Mfg. Co., Troy, N. Y.—Air Automatic and Gate Valves.
Replogle Governor Works, Chestnut St., Akron, O.—Water Wheel Governors.
Republic Rubber Co., Youngstown, O.—Gaskets, Packing, etc.
Restein, Clement, & Co., 139 No. 2d St., Philadelphia, Pa.—Packing.
Revere Rubber Co., 77 Bedford St., Boston, Mass.—Gaskets, Packing, etc.
Reynolds, M. Plumbers' Supply Co., 25 Centre St., New York Hand Pumps.
Reynolds, Graves & Co., Joplin, Mo.—Gasoline Motors.
Rhodes, J. E., & Sons, Wilmington, Del.—Belting and Belt Dressing.
Richmond Machine Works, Richmond, Ind.—Boilers and Engines.
Richmond & Holmes, St. Johns, Mich.—Gasoline Motors.
Rider-Ericsson Engine Co., 35 Warren St., New York.—Hot Air Pumps.
Ridgway Dynamo & Engine Co., Ridgway, Pa.—Automatic Cut Off and High Speed Engines.
Riehle Bros. Testing Machine Co., 1424 No. 9th St., Philadelphia, Pa.—Hydraulic Pumps.
Risdon Iron & Locomotive Works, San Francisco, Cal.—Boilers, Engines and Pumps.
Riter-Conley Mfg. Co., Pittsburg, Pa.—Riveted Pipe.
Roberts, Geo. J., & Co., Dayton, O.—Power and Steam Pumps.
Roberts Engineering Co., Pittsburg, Pa.—Engines and Chain Belting.
Roberts Machine Co., East Palestine, O.—Gas or Gasoline Engines.
Roberts Safety Water Tube Boiler Co., 39 Cortlandt St., New York.—Water Tube Boilers.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.—Exhaust Heads, Separators, etc.

Robertson Mfg. Co., 1451 Niagara St., Buffalo, N. Y.—Gas or Gasoline Engines.
Robins Conveying Belt Co., Park Row Bldg., New York.—Belting, Pulleys, etc.
Robinson & Co., Richmond, Ind.—Boilers and Engines.
Robson, Chas. W., W. Washington Ave. & 8th St., Philadelphia, Pa.—Grate Bars.
Rochester Machine Tool Works, Ltd., Rochester, N. Y.—Boilers and Engines.
Rock River Machine Co., Janesville, Wis.—Power Pumps.
Rockwood Mfg. Co., Indianapolis, Ind.—Paper Pulleys.
Rogers Locomotive Works, Paterson, N. J.—Locomotive Boilers and Engines.
Rollins Engine Co., Nashua, N. H.—Automatic Cut Off Engines.
Rollins Flue Cleaner Co., Albany, N. Y.—Boiler Tube Cleaners.
Rome Sanitary Works, Rome, N. Y.—Copper Floats.
Root, C. J., Bristol, Conn.—Revolution Counters.
Root & Vandervoort Engineering Co., Champaign, Ill.—Gasoline Engines.
Roots, P. H. & F. M., Co., Connersville, Ind.—Power and Steam Pumps.
Rose Patent Grate Co., Council Bluffs, Ia.—Grate Bars.
Rosedale Foundry & Machine Co., Allegheny, Pa.—Stokers.
Ross, Josiah, Buffalo, N. Y.—Countershafts and Shafting.
Ross & Co., 95 Liberty St., New York.—Stokers.
Ross Valve Co., Troy, N. Y.—Gate Valves.
Rossendale-Reddaway Belting & Hose Co., Newark, N. J.—Canvas and Hair Belting.
Royal Equipment Co., Bridgeport, Conn.—Gasoline Engines.
Rue Mfg. Co., 215 Race St., Philadelphia, Pa.—Ejectors and Injectors.
Ruemmeli-Dawley Mfg. Co., 3900 Chouteau Ave., St. Louis, Mo.—Cooling Towers.
Ruger, J. W., Mfg. Co., Buffalo, N. Y.—Gas or Gasoline Engines.
Rumely, M., Co., La Porte, Ind.—Tubular Boilers, Traction Engines.
Rumsey & Co., Ltd., Seneca Falls, N. Y.—Air Compressors, Power, etc., Pumps.
Rundle-Spence Mfg. Co., Milwaukee, Wis.—Pipe Fittings and Valves.
Rusden Machine Co., Warren, R. I.—Gasoline Engines.
Russell, Albert, & Sons Co., Newburyport, Mass.—Marine Pumps.
Russell, W. A., & Co., 89 Centre St., New York.—Automatic and Globe Valves.
Russell Engine Co., Massillon, O.—Engines.
Russell Mfg. Co., Middletown, Conn.—Canvas Belting.
Rutzler, E., 178 Centre St., New York.—Exhaust Heads, Steam Traps, etc.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.—Hand, Power, etc., Pumps.
St. Louis Iron & Machine Works, St. Louis, Mo.—Engines.
St. Louis Steam Engine Co., St. Louis, Mo.—Vertical Engines.
Safety Cylinder Valve Co., Mansfield, O.—Safety Pop and Water Relief Valves.
Saginaw Mfg. Co., Saginaw, Mich.—Wood Split Pulleys.

Salamander Grate Bar Co., 126 Liberty St., New York.—Grate Bars.
Salem Iron Works, Salem, N. C.—Tubular Boilers, Portable Engines.
San Francisco Tool Works, San Francisco, Cal.—Portable Engines, Power, etc., Pumps.
Sands, Alfred B., & Son, 134 Beekman St., New York.—Hand and Bilge Pumps.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.—Paper Mill Pumps.
Sargent & Greenleaf Co., Rochester, N. Y.—Vacuum Pumps.
Sarvent Marine Engine Works, 26 W. Randolph St., Chicago, Ill.—Gasoline Engines.
Sawyer Belting Co., East Cambridge, Mass.—Canvas Belting.
Sawyer Gear Works, 227 St. Clair St., Cleveland, O.—Gears.
Sawyer Hardware & Supply Co., Pawtucket, R. I.—Belt Fasteners.
Scaife, Wm. B., & Sons, 221 First Ave., Pittsburg, Pa.—Feed Water Heaters and Purifiers.
Scattergood, D., & Co., 3d & Arch Sts., Philadelphia, Pa.—Tubular Boilers and Portable Engines.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.—Lubricators, Valves, Pumps.
Scheidler, Reinhart, Newark, O.—Boilers and Engines.
Schieren, Chas. A., & Co., 45 Ferry St., New York.—Leather Belting and Belt Dressing.
Schmidt, G. & L., 216 Centre St., New York.—Gages.
Schofield Gear & Pulley Co., Providence, R. I.—Gears and Pulleys.
Schoonmaker, A. G., Co., 29 West St., New York.—Steam Traps.
Schultz Belting Co., St. Louis, Mo.—Rawhide Belting.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia, Pa.—Ejectors, Steam Traps, etc.
Scobee Loose Pulley Lubricator Co., Winchester, Ky.—Loose Pulley Oilers.
Scott Motor Works, 2112 Washington Av., St. Louis, Mo.—Gasoline Motors.
Scovill Mfg. Co., Waterbury, Conn.—Boiler Pumps.
Scranton Steam Pump Co., Scranton, Pa.—Steam Pumps.
Seelye Mfg. Co., 118 South St., Boston, Mass.—Hangers.
Seibert Cylinder Oil Cup Co., 53 Oliver St., Boston, Mass.—Oil Cups and Sight Feed Lubricators.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.—Couplings, Hangers, Pulleys, etc.
Sharpless & Watts, 1522 Chestnut St., Philadelphia, Pa.—Grate Bars.
Shaw Coupling Co., Syracuse, N. Y.—Compression Couplings.
Sheperd Engine Co., Franklin, Pa.—Engines.
Sheriffs Mfg. Co., Milwaukee, Wis.—Engines.
Sherman, R. R., & Co., Boston, Mass.—Power Pumps.
Sherwood Mfg. Co., Buffalo, N. Y.—Lubricators, etc., and Oil Pumps.
Siegrist Lubricator Co., St. Louis, Mo.—Lubricators.
Sikes, S. R., Co., Minneapolis, Minn.—Leather Belting.
Simmons Pipe Bending Works, Newark, N. J.—Bent Pipe.
Simonds Mfg. Co., Pittsburg, Pa.—Gears.
Sims Co., Erie, Pa.—Exhaust Heads, Injectors, etc.

Sinclair-Scott Co., Baltimore, Md.—Friction Clutches and Pulleys.
Sinker-Davis Co., Indianapolis, Ind.—Portable Engines and Engine Governors.
Sintz Gas Engine Co., Detroit, Mich.—Gas Engines.
Sipp Electric & Machine Co., Paterson, N. J.—Boilers and Engines.
Skillin & Richards Mfg. Co., 127 Fulton St., Chicago, Ill.—Gas or Gasoline Engines.
Skinner & Arnold Co., Albany, N. Y.—Tubular Boilers and Marine Engines.
Skinner Engine Co., Erie, Pa.—Engines and Boilers.
Smalley Mfg. Co., Manitowoc, Wis.—Portable Engines.
Smalley Motor Co., Ltd., Bay City, Mich.—Gasoline Engines.
Smedley Steam Pump Co., Dubuque, Ia.—Steam Pumps.
Smith, A. P., Mfg. Co., Newark, N. J.—Gate Valves.
Smith, F. L., Franklin Falls, N. H.—Friction Clutches.
Smith, H. B., Co., Westfield, Mass.—Tubular Boilers and Air Valves.
Smith, James, & Co., 411 Race St., Philadelphia, Pa.—Gaskets, Packing, etc.
Smith, Jas., Woolen Machinery Co., 411 Race St., Philadelphia, Pa.—Hangers, Pulleys, etc.
Smith, S. Morgan Co., New York.—Couplings, Gears and Pumps.
Smith, W. R., 262 W. 52d St., New York.—Gas or Gasoline Engines.
Smith, Myers & Schnier Co., Cincinnati, O.—Boilers, Engines and Pumps.
Snider-Hughes Co., Cleveland, O.—Blowing Engines, Air Compressors, Power, etc., Pumps.
Snow Steam Pump Works, 114 Liberty St., New York.—Steam Pumps.
Sotter Bros., Inc., Pottstown, Pa.—House Heating Boilers.
South Park Foundry & Machine Co., St. Paul, Minn.—Tubular Boilers and Gate Valves.
Southern Engine & Boiler Works, Jackson, Tenn.—Boilers, Engines and Air Compressors.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.—Boilers, Engines and Pumps.
Southwick, Geo. W., & Co., 149 Centre St., New York.—Belt Dressing.
Spade Engine Co., Vicksburg, Mich.—Gas or Gasoline Engines.
Spang, Chalfant & Co., Pittsburg, Pa.—Wrought Iron Pipe.
Specialty Mfg. Co., Indianapolis, Ind.—Water Motors.
Speed Changing Pulley Co., Indianapolis, Ind.—Countershafts.
Speidel, J. G., Reading, Pa.—Chain or Link Belting.
Spence, L., & Son, Martin's Ferry, O.—Engines.
Spencer Regulator Co., Salem, Mass.—Regulators.
Springfield Brass Co., Springfield, O.—Gages, Oil Cups, etc.
Springfield Elevator & Pump Co., Springfield, Mass.—Condensers, Air Compressors, Power, etc., Pumps.
Springfield Gas Engine Co., Springfield, O.—Gas or Gasoline Engines.
Squier, Geo. L., Mfg. Co., Buffalo, N. Y.—Steam Pumps.
Stahl-Salter Lubricating Co., Minneapolis, Minn.—Oil Cups.
Standard Chain Co., Pittsburg, Pa.—Chain or Link Belting.
Standard Gauge Mfg. Co., Syracuse, N. Y.—Gages.

Standard Ice Machine & Mfg. Co., Hamilton, O.—Feed Water Regulators.
Standard Motor Co., Kokomo, Ind.—Gasoline Motors.
Standard Pressed Steel Co., 20th & Clearfield Sts., Philadelphia, Pa.—Hangers and Floor Stands.
Standard Pump & Engine Co., Cleveland, O.—Gas or Gasoline Engines.
Standard Railway Equipment Co., Union Trust Bldg., St. Louis, Mo.—Pneumatic Motors.
Standard Safety Boiler Co., Marquette Bldg., Chicago, Ill.—Water Tube Boilers.
Standard Steam Specialty Co., 111 Fifth Ave., New York.—Boiler Feeders and Pump Governors.
Standard Water Meter Co., 245 Robinson St., Brooklyn, N. Y. Water Motors.
Standard Welding Co., Cleveland, O.—Wrought Iron Pipe.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.—Gages, Lubricators, etc.
Steam Appliance Co., 241 Greenfield Ave., Milwaukee, Wis.—Ejectors, Injectors, etc.
Stearns Mfg. Co., Erie, Pa.—Automatic Cut Off Engines, etc.
Steeger, Henry, 143 E. 31st St., New York.—Air Compressors.
Stephens, Roe, Mfg. Co., Detroit, Mich.—Ejectors, Injectors, Steam Traps, etc.
Stephenson Mfg. Co., Albany, N. Y.—Boiler Tube Cleaners, Belt Dressing.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn.—Exhaust Heads.
Sterling Engine Co., Buffalo, N. Y.—Gas or Gasoline Engines.
Sterling Lubricator Co., Rochester, N. Y.—Automatic Lubricators.
Stevens, A. W., Co., Marinette, Wis.—Boilers and Engines.
Stewart Heater Co., Buffalo, N. Y.—Condensers, Feed Water Heaters. *See adv. page 109.*
Stickney, Chas. A., Co., St. Paul, Minn.—Engines and Air Compressors.
Stickney, Henry R., Portland, Me.—Marine Engines.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.—Hangers, Pulleys, Pumps, etc.
Stokes, Joseph, Rubber Co., Trenton, N. J.—Gaskets and Packing.
Stover Engine Co., Freeport, Ill.—Gas or Gasoline Engines.
Stover Mfg. Co., Freeport, Ill.—Windmill Pumps.
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philadelphia, Pa.—Gears and Flexible Shafting.
Stow Mfg. Co., Binghamton, N. Y.—Flexible Shafting.
Stowell Mfg. & Foundry Co., South Milwaukee, Wis.—Grate Bars.
Straight Line Engine Co., Syracuse, N. Y.—Automatic Cut Off and High Speed Engines.
Strait, H. N., Mfg. Co., Kansas City, Kan.—Hangers, Shafting, etc.
Strater, Herman, & Sons, 74 Sudbury St., Boston, Mass.—Beer, Ale and Power Pumps.
Strong Machinery & Supply Co., 2½ Murray St., New York.—Gaskets and Packing.
Struthers-Wells Co., Warren, Pa.—Boilers, Engines, etc.
Stuart, R. J., New Hamburg, N. Y.—Wedge Couplings.

Sturgess Governor Engineering Co., Troy, N. Y.—Steam Engine Governors.
Sturtevant, B. F., Co., Jamaica Plain, Mass.—Engines, Exhaust Heads, etc.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.—Boilers and Engines.
Sumner, Wm., Belting Co., Tolland, Conn.—Belting.
Superior Gas Engine Co., Springfield, O.—Gas or Gasoline Engines.
Superior Iron Works, West Superior, Wis.—Engines.
Superior Shipbuilding Co., Superior, Wis.—Marine Engines.
Swain Lubricator Co., 250 Lake St., Chicago, Ill.—Oil Cups and Metallic Belting.
Swift Lubricator Co., Elmira, N. Y.—Automatic Lubricators.
Taber Pump Co., Buffalo, N. Y.—Hand and Power Pumps.
Tabor Mfg. Co., 18th & Hamilton Sts., Philadelphia, Pa.—Revolution Counters.
Talcot, W. O., Providence, R. I.—Belt Fasteners.
Talmage Mfg. Co., Cleveland, O.—Boiler Oil Feeders.
Taper Sleeve Pulley Works, Erie, Pa.—Friction Clutch Pulleys.
Taunton Locomotive Mfg. Co., Taunton, Mass.—Locomotive Boilers, Feed Water Heaters.
Taunton Rubber Mfg. Co., Taunton, Mass.—Gaskets.
Taylor Water Tube Boiler Co., Detroit, Mich.—Water Tube Boilers.
Temple Pump Co., 16-28 W. 15th St., Chicago, Ill.—Hand and Power, etc., Pumps.
Thacher Belting Hook Co., 245 Crawford Road, Cleveland, O.—Belt Fasteners.
Thomas, E. R., Motor Co., Buffalo, N. Y.—Gasoline Motors.
Thomas, Richard H., 107 Liberty St., New York.—Gas or Gasoline Engines.
Thomas Brass & Iron Co., Waukegan, Ill.—Oil Cups, Brass Fittings, etc.
Thomas Mfg. Co., Springfield, O.—Hand Pumps.
Thompson, J., & Sons, Mfg. Co., Beloit, Wis.—Gas or Gasoline Engines.
Thompson, Richard, & Co., 126 Liberty St., New York.—Exhaust Heads, Indicators, etc. *See adv. page 102.*
Thomson & Boyle Co., Los Angeles, Cal.—Cast Iron Pipe Fittings.
Thorpe, Platt & Co., 97 Cedar St., New York.—Steam Traps. *See adv. page 116* ,
Thropp, J. E., & Sons, Foot of Lewis St., Trenton, N. J.—Marine Engines.
Tight Joint Co., 306-10 E. 47th St., New York.—Malleable Iron Pipe Fittings.
Titusville Iron Co., Titusville, Pa.—Boilers, Engines, Grate Bars, etc.
Tod, Wm., Co., Youngstown, O.—Engines.
Toledo Foundry & Machine Co., Toledo, O.—Engines and Grate Bars.
Toombs, Samuel S., 10 Peck Slip, New York.—Beer and Ale Pumps.
Townsend Furnace & Machine Shop Co., Albany, N. Y.—Hangers, Shafting, etc.
Trageser, John, Steam Copper Works, 447 W. 26th St., New York.—Tubular Boilers and Copper Floats.

Trahern Pump Co., Rockford, Ill.—Hand and Power, etc., Pumps.
Tranter-Davison Mfg. Co., Pittsburg, Pa.—Ejectors, Injectors and Pumps.
Trautvetter Bros., Paterson, N. J.—Gages.
Treadwell, M. H., & Co., 97 Liberty St., New York.—Dumping and Shaking Grates.
Trebert, H. L. F., & Co., Rochester, N. Y.—Gas or Gasoline Engines, Gears.
Trenton Rubber Mfg. Co., Trenton, N. J.—Gaskets and Packing.
Trevor Mfg. Co., Lockport, N. Y.—Centrifugal and Power, etc., Pumps.
Trill, W. L., Corry, Pa.—Indicators and Reducing Wheels.
Troy Belting & Supply Co., Troy, N. Y.—Leather Belting.
Troy Engine & Machine Co., Troy, Pa.—Engines.
Truscott Boat Mfg. Co., St. Joseph, Mich.—Marine Boilers, Engines, etc.
Tudor Boiler Mfg. Co., Cincinnati, O.—Boilers and Feed Water Heaters.
Tupper, W. W., & Co., 39 Cortlandt St., New York.—Grate Bars, Dumping and Shaking Grates.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.—Chain or Link Belting.
Turners Falls Machine Co., Turners Falls, Mass.—Paper Mill and Power Pumps.
Twiss, Nelson W., New Haven, Conn.—Engines.
Ulmer Leather Co., Norwich, Conn.—Leather Belting.
Under-Feed Stoker Co., 218 La Salle St., Chicago, Ill.—Stokers.
Union Belt Co., Fall River, Mass.—Belting.
Union Boiler & Mfg. Co., Lebanon, Pa.—Steam Blow-Off Tanks.
Union Gas Engine Co., San Francisco, Cal.—Engines.
Union Hardware Co., Torrington, Conn.—Diaphragm Pumps.
Union Iron Works, San Francisco, Cal.—Boilers, Engines and Pumps.
Union Machine Co., Zanesville, O.—Portable Engines.
Union Mfg. Co., New Britain, Conn.—Hand, Power, etc., Pumps.
Union Steam Pump Co., Battle Creek, Mich.—Air Compressors, Power, etc., Pumps.
Union Steam Specialty Co., Scranton, Pa.—Indicators, Separators, etc.
Union Water Meter Co., Worcester, Mass.—Water Motors, Whistles, etc.
United & Globe Rubber Mfg. Co., Trenton, N. J.—Gaskets, Packing, etc.
United States Cast Iron Pipe & Foundry Co., 217 La Salle St., Chicago, Ill.—Cast Iron Pipe.
United States Heater Co., Detroit, Mich.—House Heating Boilers.
United States Metallic Packing Co., 427 N. 13th St., Philadelphia, Pa.—Metallic Packing.
United States Mineral Wool Co., 143 Liberty St., New York.—Gaskets.
United States Pump & Supply Co., Toledo, Ohio.—Centrifugal, Power, etc., Pumps.
United States Wind Engine & Pump Co., Batavia, Ill.—Hand Power, etc., Pumps.
Utica Gas Engine Works, Utica, N. Y.—Gas or Gasoline Engines.

Utica Pipe Foundry Co., Utica, N. Y.—Cast Iron Pipe.
Utica Steam Gauge Co., Frankfort, N. Y.—Gages and Valves.
Valley Iron Works, Williamsport, Pa.—Hangers, Shafting, etc.
Van Duzen, E. W., Co., Cincinnati, O.—Ejectors, Hangers, and Pumps.
Van Wie, Irvin, Syracuse, N. Y.—Engines and Pumps.
Variety Mfg. Co., 77 W. Lake St., Chicago, Ill.—Exhaust Heads.
Vilter Mfg. Co., Milwaukee, Wis.—Boilers and Corliss Engines.
Vincent Valve Co., Sandusky, O.—Gate Valves.
Voorhees Rubber Mfg. Co., Jersey City, N. J.—Packing.
Vulcan Asbestos Co., 116 Maiden Lane, New York.—Gaskets and Packing.
Vulcan Iron Works, San Francisco, Cal.—Hoisting and Locomotive Engines, etc.
Wadhams Oil & Grease Co., Milwaukee, Wis.—Oil Cups.
Walker & Pratt Mfg. Co., 31 Union St., Boston, Mass.—House Heating Boilers.
Wall, R. C., Mfg. Co., 1334 Race St., Philadelphia, Pa.—Gasoline Motors.
Waltham Mfg. Co., Waltham, Mass.—Gasoline Motors.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.—Steam Traps, Blow-Off Tanks, etc.
Wangler, Jos. F., Boiler & Sheet Iron Works Co., St. Louis, Mo.—Tubular Boilers and Feed Water Heaters.
Ward, Charles, Charleston, W. Va.—Power and Steam Pumps.
Ward Pump Co., Rockford, Ill.—Windmill Pumps.
Warren City Boiler Works, Warren, O.—Tubular Boilers and Riveted Pipe.
Warren Foundry & Machine Co., 160 Broadway, New York.—Cast Iron Pipe.
Warren Steam Pump Co., Warren, Mass.—Air Compressors, Power, etc., Pumps.
Washington Pulley Co., Ballard, Wash.—Wood Split Pulleys.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.—Power Pumps.
Waterbury Rubber Mfg. Co., 49 Warren St., New York.—Rubber Belting.
Waterloo Motor Works, Waterloo, Iowa.—Engines.
Waters Governor Co., 34 Oliver St., Boston, Mass.—Pump and Engine Governors, etc.
Watertown Engine Co., Watertown, N. Y.—Boilers and Engines.
Watkins, F. M., Co., Cincinnati, O.—Boilers and Gas or Gasoline Engines.
Watson, N. A., Erie, Pa.—Ejectors and Injectors.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa.—Exhaust Heads, Regulators, etc. *See adv. page 114.*
Watson-Stillman Co., 46 Dey St., New York.—Hydraulic Valves and Pumps. *See adv. page 41.*
Watt's, John M., Sons, 123 So. 2d St., Philadelphia, Pa.—Gaskets, Packing, Belt Dressing.
Watts-Campbell Co., Newark, N. J.—Compound and Corliss Engines.
Watts Regulator Co., Lawrence, Mass.—Pump Governors, Regulators, etc.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.—Gas and Gasoline Engines.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.—Gasoline Engines.

Webster, Warren & Co., Camden, N. J.—Grease Extractors, Feed Water Filters, etc.
Webster & Perks Tool Co., Springfield, O.—Reducing Wheels.
Wehrfritz, E. C., Machinery & Supply Co., Little Rock, Ark.—Throttling Engines.
Weiman Machine Works, Columbus, O.—Hand and Power, etc., Pumps.
Weimer Machine Works Co., Lebanon, Pa.—Engines and Pumps.
Welch & Lawson, 210 Centre St., New York.—Steam Traps.
Welch, T. F., & Co., 55 Sudbury St., Boston, Mass.—Hangers, Pulleys, etc.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.—Hangers, Pulleys, etc.
Wellman-Seaver-Morgan Co., Cleveland, O.—Boilers and Engines.
Wells, F. C. (Estate of), 116 Clinton St., Chicago, Ill.—Blowing Engines, Power, etc., Pumps.
Welsh, F., 276-277 West St., New York.—Gas or Gasoline Engines.
Western Malleable & Grey Iron Mfg. Co., Milwaukee, Wis.—Gasoline Engines.
Western Rawhide & Belting Co., Milwaukee, Wis.—Rawhide Belting.
Western Tube Co., Kewanee, Ill.—Pipe Fittings, Valves, etc.
Westinghouse Air Brake Co., 200 9th St., Pittsburg, Pa.—Air Compressors.
Westinghouse, Church, Kerr & Co., 8 Bridge St., New York.—Engines and Stokers.
Westinghouse Co., Schnectady, N. Y.—Traction Engines.
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.—Gas or Gasoline and Marine Engines.
Westinghouse Machine Co., Pittsburg, Pa.—Engines.
West Point Iron Works, West Point, Ga.—Portable Engines.
Wetherill, Robert, & Co., Chester, Pa.—Boilers, Engines, Pumps.
Wheaton Machine Co., 368 Congress St., Boston, Mass.—Countershafts.
Wheeler Condenser & Engineering Co., 120 Liberty St., New York.—Condensers, Separators, etc.
Whipple Cycle Co., 260 W. Jackson Blvd., Chicago, Ill.—Gasoline Motors.
White, John A., Co., Dover, N. H.—Hangers, Pulleys, etc.
White-Blakeslee Mfg. Co., Birmingham, Ala.—Gas or Gasoline Engines.
White & Middleton Gas Engine Co., Baltimore, Md.—Gas or Gasoline Engines.
Whitehead Bros., Rubber Co., Trenton, N. J.—Gaskets and Packing.
Whitehead, W. W., Co., Davenport, Iowa.—Power Pumps.
Whitlock Coil Pipe Co., Hartford, Conn.—Exhaust Heads, Bent Pipe, etc. *See adv. page 114.*
Whitney Mfg. Co., Hartford, Conn.—Wedge Couplings.
Wickes Bros., Saginaw, Mich.—Boilers, Feed Water Heaters.
Wilbraham-Green Blower Co., 2518 Frankford Ave., Philadelphia, Pa.—Centrifugal and Rotary Pumps.
Wilder, Sydney & Co., Holliston, Mass.—Hand Pumps.
Wilkinson Mfg. Co., Inc., Bridgeport, Pa.—Stokers.

Wilkinson, W. H., & Co., West Medway, Mass.—Lubricators.
Willamette Iron Works, Portland, Ore.—Boilers, Engines, Gears, etc.
Williams Bros., Ithaca, N. Y.—Portable Engines.
Williams, I. B., & Son, Dover, N. H.—Rawhide Belting.
Williams Mfg. Co., Kalamazoo, Mich.—Steam Pumps.
Williams, White & Co., Moline, Ill.—Portable Engines, Centrifugal Pumps.
Williamson Bros., Richmond & York Sts., Philadelphia, Pa.—Boilers and Engines.
Williamsport Clutch & Pulley Co., Williamsport, Pa.—Clutches, Pulleys, etc.
Willoughby, A. B., The Bourse, Philadelphia, Pa.—Grate Bars. *See adv. page 102.*
Wilmarth & Morman Co., Grand Rapids, Mich.—Countershafts and Pulleys.
Wilson-Snyder Mfg. Co., Ross & Water Sts., Pittsburg, Pa.—Air Compressors, Power, etc., Pumps.
Windsor Locks Machine Co., Windsor Locks, Conn.—Gears, Pulleys, Shafting.
Wing, J. T., & Co., Detroit, Mich.—Boiler Tube Cleaners, Pulleys.
Wing, L. J., Mfg. Co., 251 West Broadway, New York.—Engines.
Winkley Engineering Co., Lynn, Mass.—Gas or Gasoline Engines.
Winship Mfg. Co., Racine, Wis.—Wooden Hand Pumps.
Winter, F. W., & Co., Faribault, Minn.—Power Pumps.
Wise & Bailey, Front & Race Sts., Philadelphia, Pa.—Leather Belting.
Witte Iron Works Co., Kansas City, Mo.—Gas or Gasoline Engines.
Wogaman Mfg. Co., Greenville, O.—Gas or Gasoline Engines.
Wolverine Motor Works, Grand Rapids, Mich.—Gasoline Motors.
Wood, John, Mfg. Co., Conshohocken, Pa.—Water Tube Boilers.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.—Cast Iron Pipe, Valves, etc.
Wood's, T. B., Sons, Chambersburg, Pa.—Hangers, Pulleys, etc.
Woodin & Little, 312 Market St., San Francisco, Cal.—Air Compressors, Power, etc., Pumps.
Woodman, R., Mfg. & Supply Co., 63 Oliver St., Boston, Mass. Revolution Counters.
Woodmanse & Hewitt Mfg. Co., Freeport, Ill.—Hand and Steam Pumps.
Woodward Governor Co., Rockford, Ill.—Steam Engine Governors.
Woolley Foundry & Machine Co., Anderson, Ind.—Gas or Gasoline Engines.
Worthington, Henry R., 114 Liberty St., New York.—Power, etc., Pumps.
Worthington National Grate Co., Baltimore, Md.—Grate Bars.
Wright Mfg. Co., Detroit, Mich.—Water Columns, Exhaust Heads, etc.
Wyckoff, A., & Son, Co., Elmira, N. Y.—Hand Pumps.
Young, E. R., & Sons, Titusville, Pa.—Steam Pumps.
Youngstown Iron Sheet & Tube Co., Youngstown, O.—Wrought Iron Pipe.
Zimmerman Mfg. Co., Auburn, Ind.—Hand Pumps.

STEAM APPLIANCES.

BOILERS.

FLUE.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atlantic Works, 70 Border St., E. Boston, Mass.
Best, John (Estate of), Lancaster, Pa.
Bigelow Co., New Haven, Conn.
Biggs Boiler Works, Akron, O.
Borger Bros. & Co., Columbus, O.
Clark Engine & Boiler Co., Kalamazoo, Mich.
Erie City Iron Works, Erie, Pa.
Fairbanks Co., Broome and Elm Sts., New York.
Fisher & Davis, 1024 N. Main St., St. Louis, Mo.
Freeman, S. & Sons, Mfg. Co., Racine, Wis.
Frost Mfg. Co., Galesburg, Ill.
Gem City Boiler Co., Dayton, O.
Herbert, M. E. Co., 240-252 Root St., Chicago, Ill.
Keeler, E., Company, Williamsport, Pa.
Kensington Engine Works, Ltd., 245 N. Broad St., Philda.
Kewanee Boiler Co., Kewanee, Ill.
Leffel, James & Co., Springfield, O.
McIlvain & Spiegel Boiler & Tank Co., Pearl & Lawrence Sts., Cincinnati, O.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Munroe, R., & Son, Pittsburg, Pa.
Murray Iron Works Co., Burlington, Ia.
Nagle Boiler & Engine Co., Erie, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philda.
Oil City Boiler Works, Oil City, Pa.
Pennsylvania Boiler Works, Erie, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Rees, Jas., & Sons Co., Pittsburg, Pa.
Roberts Iron Works Co., Cambridgeport, Mass.
Russell, Jas., Boiler Works Co., Cor. C and 1st Sts., Boston.
Scioto Boiler Works, Columbus, Oo.
Springfield Boiler & Mfg. Co., Springfield, Ill.
Star Boiler Works, Clinton, Iowa.
Tudor Boiler Mfg. Co., Cincinnati, O.
Union Iron Wks., Erie, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
Wallabout Steam Boiler Works, Wallabout St. and Wythe Ave., Brooklyn, N. Y.
Watertown Engine Co., Watertown, N. Y.
Williamson Bros., Richmond and York Sts., Philadelphia, Pa.

Return Flue. See 2, Flue Boilers.

Two Flue. See 2, Flue Boilers.

5 **HOUSE HEATING.** Low pressure boilers for heating purposes.

Archambo Heating Co., 219 S. 3d St., Minneapolis, Minn.
Bate, W. T., & Son, Conshohocken, Pa.
Best, John (Estate of), Lancaster, Pa.
Blake & Andros, 28 Portland St., Boston, Mass.
Borger Bros. & Co., Columbus, O.
Broomell, Schmidt & Steacy Co., York, Pa.
Brownell Co., Dayton, O. *See adv. page 105.*
Carman-Thompson Co., Lewiston, Me.
Coatesville Boiler Works, Coatesville, Pa.
Electric Boiler Co., Rochester, N. Y.
Fairbanks Co., Broome and Elm Sts., New York.
Farwell Heating Co., Atchison, Kan.
Gem City Boiler Co., Dayton, O.
Giblin & Co., Utica, N. Y.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Griffing, A. A., Iron Co., 449 Communipaw Ave., Jersey City.
Gurney Heater Mfg. Co., 74 Franklin St., Boston, Mass.
Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.
Herendeen Mfg. Co., Geneva, N. Y.
Hopson & Chapin Mfg. Co., New London, Conn.
Hull, Camp Co., 127 Worth St., New York.
Ingalls & Hendrickson, 80 Sudbury St., Boston, Mass.
International Heater Co., Utica, N. Y.
Keeler, E., Company, Williamsport, Pa.
Kewanee Boiler Co., Kewanee, Ill.
Keystone Boiler & Radiator Co., Huntingdon, Pa.
Leffel, James, & Co., Springfield, O.
McIlvain & Spiegel Boiler & Tank Co., Pearl & Lawrence Sts., Cincinnati, O.
McLain, J. H., Co., Canton, O.
Magee Furnace Co., 32 Union St., Boston, Mass.
Model Heating Co., 716 Arch St., Philadelphia, Pa.
Monitor Steam Generator Mfg. Co., Landisville, Pa.
Mott, J. L., Iron Works, 88 Beekman St., New York.
Mulford Heater Co., Galva, Ill.
Murray Iron Works Co., Burlington, Ia.
Newell Mfg. Co., 149 Broadway, New York.
New York Central Iron Works Co., Geneva, N. Y.
Norton, H. M., 2d and Northampton Sts., Easton, Pa.
Oil City Boiler Works, Oil City, Pa.
Page, Wm. H., Boiler Co., Norwich, Conn.
Parkhurst Compound Steam Boiler Co., Oswego, N. Y.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.
Roberts Iron Works Co., Cambridgeport, Mass.
Russell, Jas., Boiler Works Co., Cor. C and 1st Sts., Boston.
Scioto Boiler Works, Columbus, O.
Smith, H. B., Co., Westfield, Mass.
Sotter Bros., Inc., Pottstown, Pa.
United States Heater Co., Detroit, Mich.
Walker & Pratt Mfg. Co., 31 Union St., Boston, Mass.

6 **TUBULAR.** On account of its size this list is arranged alphabetically by States.

ALABAMA.

Alabama Iron Works, Mobile, Ala.
Bailey Iron Works, Mobile, Ala.
Birmingham Boiler Works, Birmingham, Ala.

ALABAMA, Continued.

Continental Gin Co., Birmingham, Ala.
Hartley Boiler Works, Montgomery, Ala.
Home Industry Iron Works, Mobile, Ala.
Hood Machine Co., Birmingham, Ala.
Janney, A. A., & Co., Montgomery, Ala.
Lum Machinery Co., Montgomery, Ala.
Mahler & Ollinger, Mobile, Ala.
Means & Fulton Iron Works, Birmingham, Ala.
Peacock's Iron Works, Selma, Ala.
Strickland Bros. Machine Co., Tuscaloosa, Ala.
Union Iron Works, Selma, Ala.
Williamson Iron Co., Birmingham, Ala.

ARKANSAS.

Allen, W. J., Clarendon, Ark.
Breslin, C. J., Fort Smith, Ark.
Dilley Foundry Co., Pine Bluff, Ark.
Ketcham Iron Co., Fort Smith, Ark.
Little Rock Boiler Works, Little Rock, Ark.
Texas Steam Engine Works, Texarkana, Ark.
Wing-Sayle Foundry & Machine Co., Little Rock, Ark.
Wing & Stephens Co., Little Rock, Ark.

CALIFORNIA.

Brady, W. J., 113 Mission St., San Francisco, Cal.
Brode & Clark Iron Works, 621 Howard St., San Francisco.
California Boiler Works, 125 Tremont St., San Francisco, Cal.
Dundon, P. F., 223 Folsom St., San Francisco, Cal.
Dyer Bros., 360 2d St., San Francisco, Cal.
East Side Boiler Works, Oakland, Cal.
Finney, Thomas, San Diego, Cal.
Fulton Engine Works, Chavez and Queirolo Sts., Los Angeles.
Fulton Iron Works, San Francisco, Cal.
Hanke, August J., 119 Redondo St., Los Angeles, Cal.
Jackson, Byron, San Francisco, Cal.
Jardine Iron Works, 307 Folsom St., San Francisco, Cal.
Keystone Boiler Works, Main and Folsom Sts., San Francisco.
Langford Bros., Eureka, Cal.
Lemmer, J. C., 125 Fremont St., San Francisco, Cal.
Llewellyn Iron Works, Los Angeles, Cal.
McGinness, P. A., Fresno, Cal.
McGuffick, W. R., Stockton, Cal.
McGuire, Hugh, Marysville, Cal.
Moynihan, T. J., 311 Mission St., San Francisco, Cal.
Odermatt, Paul, 527 Brannan St., San Francisco, Cal.
Pacific Coast Boiler Works, 235 Main St., San Francisco, Cal.
Risdon Iron Works, San Francisco, Cal.
Root, Neilson & Co., Front St., Sacramento, Cal.
Sacramento Boiler & Iron Works, 113 L St., Sacramento, Cal.
Stockton Iron Works, Stockton, Cal.
Union Iron Works, San Francisco, Cal.
Union Iron Works, 406 E. First St., Los Angeles, Cal.
United Engineering Co., 254 Spear St., San Francisco, Cal.
United Iron Works, Oakland, Cal.
Wight, D., Pierce Ave., San Jose, Cal.

COLORADO.

Cleary, P. J., Larimer and 5th Sts., Denver, Colo.
Colorado Iron Works Co., Denver, Colo.
Davis, F. M., Iron Works, Denver, Colo.
Denver Boiler & Sheet Iron Works Co., Denver, Colo.
Denver Engineering Works Co., Denver, Colo.
McCarty & Moore, Leadville, Colo.
Mine & Smelter Supply Co., Denver, Colo.
Owen, E. S., Pueblo, Colo.
Stearns-Roger Mfg. Co., Denver, Colo.
Stroehle, D., & Son, Black Hawk, Colo.
Wich, John, Denver, Colo.
Wood & Dingley, Trinidad, Colo.
Young, John, 2245 Blake St., Denver, Colo.

CONNECTICUT.

Barton, William J., Hartford, Conn.
Beach, H. B., & Son, Hartford, Conn.
Bigelow Co., New Haven, Conn.
Bridgeport Boiler Works, Bridgeport, Conn.
Drummond, Thomas, New London, Conn.
Morgan Iron Works, New London, Conn.
Putnam Foundry & Machine Corp., Putnam, Conn.
Skidmore, P. H., & Sons, Bridgeport, Conn.

DELAWARE.

Harlan & Hollingsworth Co., Wilmington, Del.
Pusey & Jones Co., Wilmington, Del.

DISTRICT OF COLUMBIA.

Forsberg & Murray, 526 13th St. N. W., Washington, D. C.
Gray, E. N., & Co., 316 Main Ave. S. W., Washington, D. C.

FLORIDA.

Gulf Boiler & Mch. Works, Tampa, Fla.
Hughes, James, Jr., Pensacola, Fla.
Parcell, Frank, Tampa, Fla.
Pensacola Fdry. & Boiler Works, Pensacola, Fla.

GEORGIA.

Columbus Iron Works, Columbus, Ga.
Davis & Forrest, 307 Bay St., W., Savannah, Ga.
Findlay Iron Works, Macon, Ga.
Finnigan, J. J., & Co., 22 Means St., Atlanta, Ga.
Lombard Iron Works and Supply Co., Augusta, Ga.
McDonough & Ballantyne, 238 E. Broad St., Savannah, Ga.
Mallary & Taylor Iron Works, Macon, Ga.
Mingledorff & Co., 510 Indian St., Savannah, Ga.
Pekor Iron Works, Columbus, Ga.
Ray Iron Works, Brunswick, Ga.
Rourke, John, & Son, 634 Bay St., E., Savannah, Ga.
Schofield, J. S., Sons Co., Macon, Ga.
Valdosta Fdry. & Mch. Co., Valdosta, Ga.

ILLINOIS.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.

ILLINOIS, Continued.

Aurora Boiler Works, Trask St. and Dearborn Ave., Aurora, Ill.
Berry, John, 25 No. Green St., Chicago, Ill.
Bloomington Steam Boiler Wks., 216 E. Market St., Bloomington, Ill.
Brass Foundry & Heating Co., 105 Franklin St., Peoria, Ill.
Brunner Chas., Peru, Ill.
Butman Boiler Furnace Co., Monadnock Blk., Chicago, Ill.
Chesley Bros., Danville, Ill.
Corbett, Geo. E., 15 Chicago Ave., Chicago, Ill.
Drake, Wm., Springfield, Ill.
Dube, John, 979 73d St., Chicago, Ill.
Duncan Fdry. & Mch. Wks., 5th and Piasa St., Alton, Ill.
Eclipse Mche. & Boiler Wks., 1146-1148 W. 14th St., Chicago.
Haffner, Charles, 907 So. Halsted St., Chicago, Ill.
Hamler Boiler & Tank Works, 39th and Halsted Sts., Chicago.
Hawley Down Draft Furnace Co., 59 Townsend St., Chicago.
Heggie Bros., Joliet, Ill.
Hibben & Co., 9376 Ewing Ave., So. Chicago, Ill.
Illinois Bridge & Machine Co., Jacksonville, Ill.
Illinois Steam Boiler Works, 715 Carroll Ave., Chicago, Ill.
Jones, W. B., Streator, Ill.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.
Kewanee Boiler Co., Kewanee, Ill.
Kickham Bros., 430 Broadway, E. St. Louis, Ill.
Kling Bros., 287 Hawthorne Ave., Chicago, Ill.
Krier, Nicholas, 1422 No. Marshfield Ave., Chicago, Ill.
Kroschell Bros. Co., 59 E. Erie St., Chicago, Ill.
Loudon, R., 620 No. Main St., Bloomington, Ill.
McAleenan Boiler Co., Peoria, Ill.
McCarren, James, 119 So. Water St., Rockford, Ill.
McFarland, G., & Co., 53d and Clark Sts., Chicago, Ill.
McGarry, Patrick, 1175 S. Paulina St., Chicago, Ill.
McGregor, G. L., 246 So. Clinton St., Chicago, Ill.
McNeil, J. C., Co., 279 Dearborn St., Chicago, Ill.
Maloney, Patrick, 1000 Commercial Ave., Cairo, Ill.
Mathews Down Draft Boiler Co., Chicago, Ill.
Michelman Boiler Co., Quincy, Ill.
Mohr, John, & Sons, 32 Illinois St., Chicago, Ill.
Morgan Boiler Co., 40 Dearborn St., Chicago, Ill.
Murphy & Walsh, Pekin, Ill.
National Boiler Works, 60 Fulton St., Chicago, Ill.
Oakes, William L., Decatur, Ill.
Pfeiffer, Chris., 68 Michigan St., Chicago, Ill.
Pickham, Thomas F., 53 W. 14th Place, Chicago, Ill.
Pratt, Henry, Boiler & Machine Co., 869-877 S. Halsted St., Chicago, Ill.
Quincy Boiler Co., Quincy, Ill.
Ross, James, 4061 La Salle St., Chicago, Ill.
Rubel & Co., 82 Lake St., Chicago, Ill.
Savill, J. M., & Sons, Canton, Ill.
Schillinger, M., 816 R.R. Ave., Moline, Ill.
Schneider, Nicholas, 279 Dearborn St., Chicago, Ill.
Sharkey & Peck, 58 Law Ave., Chicago, Ill.
South Side Boiler Works, 553 35th St., Chicago, Ill.
Springfield Boiler & Mfg. Co., Springfield, Ill.

ILLINOIS, Continued.

Sullivan, John J., 204 Dearborn St., Chicago, Ill.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Van Sicklen, Alex., & Co., 8 So. Canal St., Chicago, Ill.
Warrington, George, Ft. of W. Wellington St., Chicago, Ill.
Weiler & Smith, 129-133 W. Superior St., Chicago, Ill.
Westwick, John, & Son, Galena, Ill.
Wildman Boiler Works, 1274-1280 W. 12th St., Chicago, Ill.
Williams, E. O., 63 So. Clinton St., Chicago, Ill.

INDIANA.

American Boiler & Sheet Iron Co., 740 W. Washington St., Indianapolis, Ind.
Atlas Engine Works, Indianapolis, Ind.
Bass Foundry & Mch. Co., Hanna St., Fort Wayne, Ind.
Broderick-Quinlan Mfg. Co., Montpelier, Ind.
Carpenter, G. Albert, Muncie, Ind.
Chandler & Taylor Co., Indianapolis, Ind.
Cruse & Connaughton, 534 S. Capitol Ave., Indianapolis, Ind.
Elmer & McAllister, Logansport, Ind.
Emery, John H., & Co., Terre Haute, Ind.
Gaar, Scott & Co., Richmond, Ind.
Grote Mfg. Co., Evansville, Ind.
Gruber, F. J., Barr, near E. Superior St., Fort Wayne, Ind.
Hegewald, C., & Co., New Albany, Ind.
Henry, Charles, Madison, Ind.
Hogan, J. F., & Co., Marion, Ind.
Johnson Fdry. & Machine Shops, Madison, Ind.
Keck, Gonnerman & Co., Mt. Vernon, Ind.
Kennedy, P. W., 1131 Beecher St., Indianapolis, Ind.
Korstad, A. P., 40 Poplar St., Terre Haute, Ind.
Lawton Mfg. Co., Wabash, Ind.
Lyle & Reynolds, Crawfordsville, Ind.
McGrath, Robert H., Lafayette, Ind.
McKenzie & Diamond, Elwood, Ind.
Marion Co-operative Machine & Boiler Works, Marion, Ind.
Matthews Steam Boiler Works Co., South Bend, Ind.
National Boiler Co., 1024 Dover St., Indianapolis, Ind.
O'Meara, Henry F., Muncie, Ind.
Pelz, William, Evansville, Ind.
Heilman Machine Works, Evansville, Ind.
Reeves & Co., Columbus, Ind.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Rumely, M., Co., La Porte, Ind.
Sweeney, M. A., Co., Jeffersonville, Ind.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Vanes, John, Brazil, Ind.
Walsh, Edward, Marion, Ind.

IOWA.

American Iron Works, Des Moines, Iowa.
Brown Bros., Eldora, Iowa.
Des Moines Mfg. & Supply Co., 101 E. Court Ave., Des Moines, Iowa.
Eagle Iron Works, 301 E. Court Ave., Des Moines, Iowa.
Fair-Williams Bridge & Mfg. Co., Ottumwa, Iowa.

IOWA, Continued.

Furlong, Henry, 214 E. First St., Des Moines, Iowa.
Garren & Hines, Muscatine, Iowa.
Grupe, Durbin & Son, 317 E. 2d St., Davenport, Iowa.
Harrington's Foundry, Oskaloosa, Iowa.
Iowa Iron Works Co., Dubuque, Iowa.
McDaniel, C. E., 219 S. Wapello St., Ottumwa, Iowa.
McElroy Iron Works Co., 19 S. 9th St., Keokuk, Iowa.
Marshall, William, 10th and Washington Sts., Dubuque, Iowa.
Morrison Bros., 501 Iowa St., Dubuque, Iowa.
Mullin, Jerry, 325 N. 3d St., Cedar Rapids, Iowa.
Murray Iron Works Co., Burlington, Ia.
Mussett & Wright, Waterloo, Iowa.
Pidduck & Spencer, Sioux City, Iowa.
Roche, W. F., Boone, Iowa.
Sioux City Boiler & Sheet Iron Works, Sioux City, Iowa.
Star Boiler Works, Clinton, Ia.
Turner & Brownlie, 300 E. Court Ave., Des Moines, Iowa.
Vance & Meyers, Muscatine, Iowa.

KANSAS.

Bromich, Joseph, Topeka, Kan.
Ehrsam, J. B., & Sons Mfg. Co., Enterprise, Kan.
Fort Scott Fdry. & Mch. Works, Fort Scott, Kan.
Guldaman Bros., Wichita, Kan.
McNally Thomas, Pittsburg, Kan.
Newsome, Joseph (Estate of), 217 Choctaw St., Leavenworth, Kan.

KENTUCKY.

Geiger, Fisk & Koop, 725 E. Main St., Louisville, Ky.
Mitchell, John, & Co., 312 11th St., Louisville, Ky.
Mitchell, Thomas, Jr., 1713 W. Main St., Louisville, Ky.
Vogt, Henry, Machine Co., Louisville, Ky.

LOUISIANA.

Connell, J. D., Iron Works, New Orleans, La.
Dummet, Frederick, 1532 Perrilliat St., New Orleans, La.
Frederick, George, foot of North St., Baton Rouge, La.
Jeffrey, Daniel, Jeanerette, La.
Johnson Iron Works, Julia and Water Sts., New Orleans, La.
Kelly, James, 728 Magazine St., New Orleans, La.
Murphy's, John H., Iron Wks., Magazine & Girod Sts., New Orleans, La.
Payne & Joubert, 423 Carondelet St., New Orleans, La.
Thibodaux Boiler Works Co., Thibodaux, La.
Whitney Iron Works, St. Joseph St., New Orleans, La.

MAINE.

Bath Iron Works, Bath, Me.
Camden Anchor Rockland Machine Co., Rockland, Me.
Portland Co., Inc., Portland, Me.
Union Iron Works, 15 Oak St., Bangor, Me.

MARYLAND.

Baltimore Marine Railway Machine & Boiler Works, Baltimore, Md.

MARYLAND, Continued.

Baltimore Ship Building & Dry Dock Co., Locust Point, Baltimore, Md.
Bartlett, Hayward & Co., Continental Trust Bldg., Baltimore.
Basshor, T. C., Co., Baltimore, Md.
Cathell Bros., 706 Covington St., Baltimore, Md.
Clark, James, Co., Foot of Webster St., Baltimore, Md.
Codd, E. J., Co., Baltimore, Md.
Coleman, John T., 407 E. Saratoga St., Baltimore, Md.
Crock, Horner & Co., 301 N. Howard St., Baltimore, Md.
Ellicott Machine Co., Bush and Paca Sts., Baltimore, Md.
Flynn & Emrich, Union Trust Bldg., Baltimore, Md.
Murray, James, & Son, 106 E. York St., Baltimore, Md.
Renneburg, Edward, & Son, 1919 Aliceanna, St., Baltimore, Md.
Schaffer Boiler & Engine Mfg. Co., 327 N. Calvert St., Baltimore, Md.
Triplett & Jennings, 102 E. York St., Baltimore, Md.

MASSACHUSETTS.

Atlantic Works, 70 Border St., E. Boston, Mass.
Brown, James H., & Co., Salem, Mass.
Burlingame, A., Co., Worcester, Mass.
Campbell, William, & Co., Cambridge, Mass.
Coghlan's Steam Boiler Works, Holyoke, Mass.
Cunningham Iron Co., Congress, Cor. B St., Boston, Mass.
Dillon, David M., Fitchburg, Mass.
Fore River Engine Co., Quincy, Mass.
Hannan & Finton, Springfield, Mass.
Hawkins, R. F., Iron Works, Springfield, Mass.
Hodge Boiler Works, Summer and N. Ferry Sts., Boston, Mass.
Kelley, Edward, Oil Works Wharf, Fall River, Mass.
Kendall, Edward, & Sons, Cambridge, Mass.
McCabe, Edward, & Son, Lawrence, Mass.
McLauthlin, George T., 120 Fulton St., Boston, Mass.
New Bedford Boiler & Machine Co., New Bedford, Mass.
Percy, C. W., 212 Summer St., Boston, Mass.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.
Riverside Boiler Works, Boston, Mass.
Roberts Iron Works Co., Cambridgeport, Mass.
Robinson, A. F., Boiler Works, Cambridge, Mass.
Russell, Daniel, Boiler Works, 77 Dorchester Ave., Boston.
Russell, Jas., Boiler Works Co., cor. C & 1st Sts., Boston, Mass.
Scannell & Sons, 26 Tanner St., Lowell, Mass.
Stewart, C., & Son, Boiler Works, Worcester, Mass.
Sylvester, F., & Co., Gloucester, Mass.
Walsh Boiler & Iron Works, Springfield, Mass.
Walsh, W. J., Mechanic St., Holyoke, Mass.

MICHIGAN.

Bartlett, A. F., & Co., Saginaw, Mich.
Bay City Boiler Co., Bay City, Mich.
Bay City Iron Co., Bay City, Mich.
Brandel, John H., Owosso, Mich.
Brennan, John, & Co., Detroit, Mich.
Brobst, Henry, 530 Canal St., Grand Rapids, Mich.
Buchner, William, Adrian, Mich.
Clark Engine & Boiler Co., Kalamazoo, Mich.
Cole, W. T., Ishpeming, Mich.

MICHIGAN, Continued.

Comstock Mfg. Co., Comstock, Mich.
Crowley, John, Jackson, Mich.
Cuddy, M. J., Escanaba, Mich.
Davis, John H., Ludington, Mich.
Davis, William T., & Co., Battle Creek, Mich.
Decker & Kaiser, Adrian, Mich.
Desner & Ritchie, 11 St. Aubin Ave., Detroit, Mich.
Dry Dock Iron Works, Port Huron, Mich.
Dutton, C. H., Co., Kalamazoo, Mich.
Eureka Boiler Co., Saginaw, Mich.
Fernstrum, Frank G., Menominee, Mich.
Flooring & Kane, Adrian, Mich.
Garske, August, Kalamazoo, Mich.
Grand Rapids Boiler Works, Grand Rapids, Mich.
Hayes, William, Cadillac, Mich.
Isbell, J. W., St. Joseph, Mich.
Jack, Andrew, Manistee, Mich.
Jackson & Church Co., Saginaw, Mich.
Jarvis Engine & Machine Works, 203 Grand St. S., Lansing, Mich.
Jenks Shipbuilding Co., Port Huron, Mich.
Johnston Bros., Ferrysburg, Mich.
Keeley, James J., Jackson, Mich.
Lake Shore Engine Works, Marquette, Mich.
Leitelt, Adolph, Iron Works, Grand Rapids, Mich.
McGregor, James, Cheboygan, Mich.
MacKinnon Mfg. Co., 230 N. Water St., Bay City, Mich.
Maher, Michael, 400 N. Water St., Bay City, Mich.
Manistee Iron Works Co., Manistee, Mich.
Montague Iron Works, Montague, Mich.
Mummery, D., Stanton, Mich.
Muskegon Boiler Works, Muskegon, Mich.
Oliver, John, Alpena, Mich.
Portage Lake Boiler Works, Hancock, Mich.
Pratt, Stephen, Foundry St., Detroit, Mich.
Richmond & Holmes, St. John, Mich.
Sprenger, Joseph, & Sons, 1194 River St., Detroit, Mich.
Standard Foundry Co., Detroit, Mich.
Tunnel City Boiler Works, Port Huron, Mich.
Van Camp & Nagel, Owosso, Mich.
Wickes Bros., Saginaw, Mich.
Wright, Archibald M., Port Huron, Mich.

MINNESOTA.

Bros, William, Boiler & Mfg. Co., Lower Nicollet Island, Minneapolis, Minn.
Crown Iron Works Co., 115 Second Ave., S. E., Minneapolis.
Doran, James, Stillwater, Minn.
Enterprise Machine Co., 423 S. 4th St., Minneapolis, Minn.
Gilmore, J. K., Co., 200 Lyndale Ave., N., Minneapolis, Minn.
Gogebic Steam Boiler Works, Duluth, Minn.
Howell, R. R., & Co., Minneapolis, Minn.
Kenny Bros., 339 E. 4th St., St. Paul, Minn.
Lambrix Bros., 505 13th Ave., S., Minneapolis, Minn.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.

MINNESOTA, Continued.

Northwestern Steam Boiler Works, Duluth, Minn.
Roberts-Goss Co., 4th and Pine Sts., St. Paul, Minn.
South Park Foundry & Machine Co., St. Paul, Minn.
Vulcan Boiler Works, Water and Walter Sts., St. Paul, Minn.

MISSISSIPPI.

Adams, W. T., Machine Co., Corinth, Miss.
Foley, P. J., & Son, 206 N. Mulberry St., Vicksburg, Miss.
Martin Machine Works, Meridian, Miss.
Robinson, B. J., Vicksburg, Miss.

MISSOURI.

Augustine, T. C., 611 Batee St., St. Joseph, Mo.
Brooks, James, Moberly, Mo.
Darby, Isaac H., 506 W. 5th St., Kansas City, Mo.
Fisher & Davis, 1024 N. Main St., St. Louis, Mo.
Freeman Foundry & Machine Works, Joplin, Mo.
Fritz, Geo. J., Foundry & Machine Co., St. Louis, Mo.
Fulton Iron Works, St. Louis, Mo.
Geis & Bichler, 1005 S. 8th St., St. Joseph, Mo.
Johnson, John O., 1301 Joplin St., Joplin, Mo.
Merton, D. S., & Co., 412 S. 6th St., St. Louis, Mo.
Nooter, John, Boiler Works Co., 816 N. Main St., St. Louis, Mo.
Palmer, George W., 417 W. 5th St., Kansas City, Mo.
Parsons, J. W., Louisiana, Mo.
Price & Leverett, Joplin, Mo.
Rohan, John, & Son, Boiler Works Co., Lewis and Biddle Sts., St. Louis, Mo.
Ryan Bros., 811 N. Levee St., St. Louis, Mo.
Sergeant, W. C., & Co., 306 Jackson Ave., Joplin, Mo.
Stark, Henry, Joplin, Mo.
United Iron Works Co., Springfield, Mo.
Urie Boiler & Machine Co., Kansas City, Mo.
Verbarg, C. H., 2830 S. 3d St., St. Louis, Mo.
Wangler, Joseph F., Boiler & Sheet Iron Works, 1547 N. 9th St., St. Louis, Mo.
Webb City Iron Works, Webb City, Mo.
Western Boiler & Sheet Iron Works, 240 Dickson St., St. Louis.

MONTANA.

Great Falls Iron Works, Great Falls, Mont.

NEBRASKA.

Drake-Wilson-Mount Co., Omaha, Neb.
Lincoln Steam Boiler & Sheet Iron Works, Lincoln, Neb.
Lowrey, John R., Omaha, Neb.
Smith, R. L., Machine Works, Lincoln, Neb.

NEW HAMPSHIRE.

Exeter Machine Works, Exeter, N. H.
Hutchinson's, Chas. H., Foundry & Machine Works, Manchester, N. H.
Spence & Rideout, Nashua, N. H.

NEW JERSEY.

Ball, Charles C., 148 N. J. R.R. Ave., Newark, N. J.
Birch, F. F., Dover, N. J.

NEW JERSEY, Continued.

Brown & Miller, Foot of Morris St., Jersey City, N. J.
Connelly, T. P., Foot of Morris St., Jersey City, N. J.
Currier, Cyrus, & Sons, Newark, N. J.
Dialogue, John H., & Sons, Camden, N. J.
Fletcher, W. & A., Co., 12th and Hudson Sts., Hoboken, N. J.
Hartung & Adam, Newark, N. J.
Hayes Mfg. Co., Paterson, N. J.
Hewes & Phillips Iron Works, Newark, N. J.
Lambert Hoisting Engine Co., Newark, N. J.
MacKenzie, Duncan & Sons, Trenton, N. J.
Mundy, J. S., 22 Prospect Street, Newark, N. J.
Nixon, Lewis, Elizabeth, N. J.
Prospect Boiler Co., New Brunswick, N. J.
Seymour & Whitlock, Newark, N. J.
Sipp Electric & Machine Co., Paterson, N. J.
Smith, Theodore, & Sons, Foot of Essex St., Jersey City, N. J.
Spracklin Boiler & Machine Co., Trenton, N. J.
Thropp, J. E., & Sons, Foot of Lewis St., Trenton, N. J.
Thropp, W. P., E. State St., Trenton, N. J.
Tippett & Wood, Phillipsburg, N. J.
Watson, J., 1 Fair St., Trenton, N. J.

NEW YORK.

Ahern, D., & Co., 263 South St., New York.
Ames Iron Works, Oswego, N. Y.
Armitage-Herschell Co., North Tonawanda, N. Y.
Atlantic Basin Iron Works, Summit and Imlay Sts., Brooklyn.
Babcock & Wilcox Co., 85 Liberty St., New York. *See adv. page 108.*
Bacon, Earle C., 26 Cortlandt St., New York.
Barber Bros., 500 E. Water St., Syracuse, N. Y.
Boes, Henry J., 487 E. 138th St., New York.
Brown, Francis A., Lockport, N. Y.
Bryson, R., & Son, 161 Mill St., Pulaski, N. Y.
Carroll Bros. Boiler Works, 87 W. 2d St., Oswego, N. Y.
Catchpole Boiler Fdy. & Mch. Co., 23 Jackson St., Geneva, N. Y.
Collins, John H., 20 Walnut St., Amsterdam, N. Y.
Collins, William P., & Son, Long Island City, N. Y.
Columbia Engineering Works, William and Imlay Sts., Brooklyn, N. Y.
Conklin, C. W., 48-50 Washington St., Auburn, N. Y.
Cunningham, Christopher, Greenpoint Ave., Brooklyn, N. Y.
Dederick's, P. K. Sons, Albany, N. Y.
Delaney, Patrick, & Co., Colden and Renwick Sts., Newburg, N. Y.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Donohue's, Peter J., Sons, Wythe Ave. & Wallabout St., Brooklyn, N. Y.
Electric Boiler Co., Pulaski, N. Y.
Elmira Boiler Works, Elmira, N. Y.
Enderlin, Joseph, Jr., & Co., 49 N. 6th St., Brooklyn, N. Y.
Fitzgibbons Boiler Co., Cor. E. 10th and DeWitt Sts., Oswego, N. Y.
Fogarty, Michael, & Bro., 533 W. 33d St., New York.
Franklin Machine & Steam Boiler Works, 13 Franklin St., Brooklyn, N. Y.

NEW YORK, Continued.

Gas Engine & Power Co. & Chas. L. Seabury & Co., Morris Heights, N. Y.
Gilroy, James J., Ft. 24th St., Brooklyn, N. Y.
Green, P. F., 67 Church St., Albany, N. Y.
Hagan Boiler Wks., East Ave. and Newtown Creek, Long Island City, N. Y.
Hall & Hulbert, Ft. 24th St., Brooklyn, N. Y.
Hall's, Sidney, Son, 175 Mill St., Pulaski, N. Y.
Hatflinger, John, 46 Reid St., Amsterdam, N. Y.
Heipershausen Bros., 43 Tompkins St., New York.
Hennessy, Dennis, 423 S. West. St., Syracuse, N. Y.
Holly Mfg. Co., Lockport, N. Y.
Howard & Roberts, 21 Indiana St., Buffalo, N. Y.
Jamestown Boiler Works, Jamestown, N. Y.
Kane, John, Nyack, N. Y.
Kingsford Foundry & Machine Co., Oswego, N. Y.
Kipp, Abram, Ossining, N. Y.
Lake Erie Boiler Works, Chicago, cor. Perry Sts., Buffalo.
Lake Erie Engineering Works, Buffalo, N. Y.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Logan Iron Works, 56 Commercial St., Brooklyn, N. Y.
McEntree, John, 113 E. Strand St., Kingston, N. Y.
Mack Bros., 407 Marcellus St., Syracuse, N. Y.
Mahar, John, Tonawanda, N. Y.
Marceau, C., 30 Main St., Ogdensburg, N. Y.
Mitchell Co., 621 W. 24th St., New York.
Morgan Iron Works, Ft. E. 9th St., New York.
Morse Iron Works & Dry Dock Co., Ft. 58th St., Brooklyn, N. Y.
Mott, J. L., Iron Works, 88 Beekman St., New York.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
New York Central Iron Works, Geneva, N. Y.
Nichols, D. M., 2 Gouverneur Slip, New York.
Novelty Steam Boiler Works, Greenpoint Ave. and Newtown Creek, Brooklyn, N. Y.
O'Hanlon, Thomas, & Sons, 4 Pine St., Utica, N. Y.
Oldman Boiler Works, 29 Burwell Pl., Buffalo, N. Y.
Olmstead, A. E., Pulaski, N. Y.
Parkhurst Compound Steam Boiler Co., Oswego, N. Y.
Payne Engineering Co., 141 Broadway, New York.
Perry, John W., & Son, 416 Canal St., Syracuse, N. Y.
Pierce, Butler & Pierce Mfg. Co., 118 S. Clinton St., Syracuse, N. Y.
Pinkerton & Mull, Green Island, N. Y.
Pioneer Iron Works, 149 William St., Brooklyn, N. Y.
Queen City Engineering Co., Perry, cor. Mississippi Sts., Buffalo, N. Y.
Queens Borough Boiler Wks., 14 7th St., Long Island City, N. Y.
Quintard Iron Works, 712 E. 12th St., New York.
Raab Iron Works, Ft. 26th St., Brooklyn, N. Y.
Reddy's, M., Sons, Little Falls, N. Y.
Reilly, James, Repair & Supply Co., 230 West St., New York.
Ross Iron Works, Ft. 27th St., Brooklyn, N. Y.
Shapley & Wells, Binghamton, N. Y.
Skinner & Arnold Co., 205 Broadway, Albany, N. Y.
Smith, Albert, & Son, 687 11th Ave., New York.
Steam Boiler Equipment Co., 20 W. Houston St., New York.

NEW YORK, Continued.

Steam Carriage Boiler Co., 119 W. 1st St., Oswego, N. Y.
Sullivan, John W., 384 South St., New York.
Sutherland & Kelly, 7th Ave. and North St., Troy, N. Y.
Syracuse Boiler & Sheet Iron Works, 610 E. Water St., Syracuse, N. Y.
Tashenberg, Wm. M., & Co., 27 Washington St., Buffalo, N. Y.
Thayer & Co., 39 Cortlandt St., New York.
Utnca Steam Engine & Boiler Works, 272 Whitesboro St., Utica, N. Y.
Vance Boiler Works, Near Lehigh Valley Station, Geneva, N. Y.
Vandenberg, Frederick B., 23 Burt Ave., Auburn, N. Y.
Vanderbogart, J. H., Watervliet, N. Y.
Vulcan Iron Works, 138 W. 2d St., Oswego, N. Y.
Wallabout Steam Boiler Works, Wallabout St. and Wythe Ave., Brooklyn, N. Y.
Walsh, Stephen S., 173 Lancaster St., Albany, N. Y.
Warner Safety Boiler Co., Oneida, N. Y.
White, Robert, Eng. Wks., Ft. Columbia St., Brooklyn, N. Y.
Wilson, W. A., Machine Co., 217 N. Water St., Pulaski, N. Y.

NORTH CAROLINA.

Liddell Co., Charlotte, N. C.
Mecklenburg Iron Works, Charlotte, N. C.
Salem Iron Works, Salem, N. C.
Tompkins, D. A., Co., 25 S. Church St., Charlotte, N. C.

OHIO.

Adams Bros. Co., Findlay, O.
Aultman & Taylor Mchy. Co., Mansfield, Ohio.
Aultman Co., Canton, Ohio.
Barnes, Charles, Co., 53 Main St., Cincinnati, O.
Bellaire Boiler & Structural Iron Works, Bellaire, O.
Biggs Boiler Works Co., Akron, O.
Lorger Bros. & Co., Broad and Scioto Sts., Columbus, O.
Brownell Co., Dayton, O. *See adv. page 105.*
Buckeye Boiler Co., 314 E. Necom Ave., Dayton, O.
Byers, John F., Machine Co., Ravenna, O.
Cady, A. L., Steubenville, O.
Canty, John F., Tiffin, O.
Colley & Finley Iron Works, 500 S. Main St., Lima, O.
Craig Shipbuilding Co., Craig and Front Sts., Toledo, O.
Crampton & Son, Covington, O.
Dover Boiler Works, Canal Dover, O.
Enterprise Boiler Co., 249 Market St., Youngstown, O.
Farasey, Jas. D., & Co., Forest St., near Erie R. R., Cleveland.
Fassett, J. E. & Co., Wellsville, O.
Forest City Boiler Co., 117 River St., Cleveland, O.
Fritsch, F., Mfg. Co., 223 W. McMicken Ave., Cincinnati, O.
Gem City Boiler Co., Dayton, Ohio.
Graves & Marshall, 401 E. First St., Dayton, O.
Griffith, C. M., Boiler Works, Bradner, O.
Houston, Stanwood & Gamble, Cincinnati, Ohio.
Huber Mfg. Co., Marion, Ohio.
Jones, Robert, & Co., Pearl and Ludlow Sts., Cincinnati, O.
June, D., & Co., Fremont, O.
Keenan, J. J., & Sons, Elm, cor. Hemlock St., Cleveland, O.
Kuhn, D. R., Norwalk, O.

OHIO, Continued.

Leffel, Jas., & Co., Springfield, Ohio.
Leetonia Boiler Co., Leetonia, O.
Limbaugh & O'Connor, Tiffin, O.
Loos, Adam, 139 S. Erie St., Toledo, O.
Lucas, C. O., & Co., Greenville, O.
McArthur, George, Findlay, O.
McIlvain & Spiegel Boiler and Tank Co., Pearl and Lawrence Sts., Cincinnati, Ohio.
McKinnon, W. S., Ashtabula Harbor, O.
McNamara, J. D., Machine Works, Newark, O.
Maher & Hirsh, 51 Main St., Cleveland, O.
Marietta Boiler Works, Marietta, O.
Marine Boiler Works, Front and York Sts., Toledo, O.
Meehan Boiler and Construction Co., Lowellville, O.
Murphy & Donnelly Boiler Co., 20 Elm St., Cleveland, O.
Niles Boiler Co., N. Main St., and Erie R. R., Niles, O.
Novelty Iron Co., Canton, O.
Olive Foundry & Machine Co., 107 N. 2d St., Ironton, O.
Pattin Bros., Marietta, O.
Portsmouth Foundry & Machine Works, Portsmouth, O.
Randle Machinery Co., Cincinnati, O.
Rarig Engineering Co., Columbus, O.
Reeves Bros. Co., Intersec. C. & P. and A. N. R. R., Alliance, O.
Ricard Boiler & Engine Co., 700 Water St., Toledo, O.
Russell & Co., Massillon, O.
Scheidler, Reinhart, Newark, O.
Smith, C. Z., North Baltimore, O.
Smith, Myers & Schnier, 621 W. Front St., Cincinnati, O.
Smith, Philip, Sidney, O.
Strecker, Henry, Marietta, O.
Thomas, J. E., Co., Newark, O.
Trombley Boiler Works, Trombley, O.
Tucker, W. M., Newark, O.
Tudor Boiler Mfg. Co., Cincinnati, O.
Union Machine & Boiler Co., 108 River St., Cleveland, O.
Variety Iron Works Co., 57 Scranton St., Cleveland, O.
Vulcan Iron Works, 916 Summit St., Toledo, O.
Walsh, J., & Son, Cygnet, O.
Warren City Boiler Works, Warren, O.
Watkins, F. M., Co., Cincinnati, Ohio.
Welton Co., Bank St., cor. Camden Ave., Canton, O.

OREGON.

Honeyman & Co., 301-307 Front St., Portland, Ore.
Monks, James, 13th St., cor. Northrup St., Portland, Ore.
Phoenix Iron Works, E. Water St., Portland, Ore.
Portland Iron Works, 14th St., cor. Northrup St., Portland, Ore.

PENNSYLVANIA.

Backus, Peter B., Abbott St., Wilkesbarre, Pa.
Bate, W. T., & Son, Conshohocken, Pa.
Beaver Valley Boiler Works, Beaver Falls, Pa.
Best, John (Estate of), Lancaster, Pa.
Bovaird & Seyfang Mfg. Co., 34 Davis St., Bradford, Pa.
Bricker & Co., 115 Mill St., Butler, Pa.
Burchfield, T. T., Co., 48 N. 7th St., Philadelphia, Pa.

PENNSYLVANIA, Continued.

Carlin's, Thos., Sons Co., Allegheny, Pa.
Carroll, Patrick, 1335 Mt. Vernon St., Philadelphia, Pa.
Clinch, A. F., Broad and E. Philadelphia Sts., York, Pa.
Connery & Co., 1235 W. 9th St., Philadelphia, Pa.
Erie City Iron Works, Erie, Pa.
Erie Engine Works, Erie, Pa.
Exeter Machine Works, Pittston, Pa.
Farquhar, A. B., Co., Ltd., York, Pa.
Frick Co., Waynesboro, Pa.
Geiser Mfg. Co., Waynesboro, Pa.

Gilman, William, 1110 Beach St., Philadelphia, Pa.
Goldner, Henry, & Son, Tasker St. Wharf, Del. River, Philda.
Hammond Iron Works, Warren, Pa.
Heilman Boiler Works, Front and Linden Sts., Allentown, Pa.
Harrisburg Foundry & Machine Works, Harrisburg, Pa.
International Boiler Works Co., East Stroudsburg, Pa.
Kane, William, Mfg. Co., Huntingdon Ave. and Potter St., Philadelphia, Pa.

Keeler, E., Co., Williamsport, Pa.
Kensington Engine Works, Ltd., 245 N. Broad St., Philda.
Lappan, Jas., Mfg. Co., 20th and Pike Sts., Pittsburg, Pa.
Larzelere Machine Co., Williamsport, Pa.
Link, E. M., Machinery Co., Erie, Pa.
McAdams, John W., Otis St. Wharf, Philadelphia, Pa.
McDermott Bros. Boiler Works, 3d and Cedar Sts., Allentown.
Manchester & Co., 3108 Smallman St., Pittsburg, Pa.

Messinger Mfg. Co., Tatamy, Pa.
Monroe, Robert & Son, 23d and Smallman Sts., Pittsburg, Pa.
Morrison, J. F., 41 Water St., Pittsburg, Pa.
Motter, Geo. F., & Sons, York, Pa.
Mullen, John & Son, Shamokin, Pa.
Munroe, R., & Son, Pittsburg, Pa.
Mursch, Frederick, 500 Birch St., Scranton, Pa.
Nagle Boiler & Engine Co., Erie, Pa.
Neafie & Levy Ship & Engine Building Co., 1336 Beach St., Philadelphia, Pa.

O'Brien & Double, Bradford, Pa.
Oil City Boiler Works, Oil City, Pa.
Oil Well Supply Co., Pittsburg, Pa.
Orr & Sembower, Reading, Pa.
Pearson, John M., & Co., 2 Mulberry St., Allegheny, Pa.
Pennsylvania Boiler Works, Erie, Pa.
Petroleum Iron Works Co., Washington, Pa.

Petty, J. K., & Co., 206 N. 4th St., Philadelphia, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Porter Foundry & Machine Co., 1 Darrah St., Allegheny, Pa.
Radcliff, Ferguson & Co., Pencoyd, Pa.
Ravey, Joseph H., Bridge St., Oil City, Pa.
Rees, Jas., & Sons Co., Pittsburg, Pa.
Reilly & Fearon, 1154 N. 3rd St., Philadelphia, Pa.
Rheam, S. B., & Co., 43d and A. V. Ry., Pittsburg, Pa.
Ridgway Mfg. Co., Ridgway, Pa.
Ryan, M., Washington, Pa.
Sands, Creagh & Co., Allegheny and South Aves., Allegheny.
Scaife, Wm. B., & Sons, 221 First Ave., Pittsburg, Pa.
Scattergood, D., & Co., Philadelphia, Pa.

PENNSYLVANIA, Continued.

Schimpf, George A., Pottsville, Pa.
Scott, J. A., 2237 N. Front St., Philadelphia, Pa.
Sharon Boiler Works, Sharon, Pa.
Slatington Foundry, Machine & Boiler Works, Ltd., Slatington, Pa.
Struthers-Wells Co., Warren, Pa.
Titusville Iron Co., Titusville, Pa.
U. S. Oil & Gas Well Supply Co., 245 Water St., Pittsburg, Pa.
Vandyke, H. J., Renfrew, Pa.
Vulcan Iron Works, 727 S. Main St., Wilkesbarre, Pa.
Williamson Bros., Richmond and York Sts., Philadelphia, Pa.
Wilson, George C., & Co., 2d and Pine Sts., Reading, Pa.

RHODE ISLAND.

Colvin Foundry Co., 165 Orange St., Providence, R. I.
Cruikshank Engine Co., 286 Dyer St., Providence, R. I.
Hicks Boiler Works, 614 S. Main St., Providence, R. I.

SOUTH CAROLINA.

Riley's, J. F., Foundry & Machine Works, 6-8 South St., Charleston, S. C.

TENNESSEE.

Casey & Hedges Mfg. Co., Chattanooga, Tenn.
Culbert, Wm., & Sons Co., 127 S. Market St., Nashville, Tenn.
Dallas, B. B., 201 Hardee St., Knoxville, Tenn.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
McCarthy & Son, 26 N. Front St., Memphis, Tenn.
Shea, Daniel, Boiler Works, Front and Washington Sts., Memphis, Tenn.
Sherman, Morris, Mfg. Co., Foot W. 6th St., Chattanooga, Tenn.
Southern Engine & Boiler Works, Jackson, Tenn.
Wood, B. G., 104 N. College St., Nashville, Tenn.

TEXAS.

Alamo Iron Works, San Antonio, Tex.
Astall Iron Works Co., 2615 Strand St., Galveston, Tex.
Bachman Foundry & Machine Co., 300 Guadaloupe St., Austin, Tex.
Banning, F. D., Waco, Tex.
Beaumont Iron Works, Bowie and Orleans Sts., Beaumont, Tex.
Bothman, William, 2509 Mechanic St., Galveston, Tex.
Collins, F. F., Mfg. Co., San Antonio, Texas.
Fort Worth Boiler Works, S. W. cor. Lamar St., Ft. Worth, Tex.
Heierman, Frank & Bro., 1304 E. 4th St., Austin, Tex.
Kane, J. J., 2716 Strand St., Galveston, Tex.
Lone Star Engine & Boiler Works, Greenville, Tex.
Neches Iron Works, Bowie and Sabine Sts., Beaumont, Tex.
Sherman Iron Works, Sherman, Tex.
Stopple & Ries, Railroad St., bet. 3d and 4th Sts., Houston, Tex.
Texas Car & Foundry Co., Texarkana, Tex.
Thrash, J. F., 286 S. Lamar St., Dallas, Tex.
Tofte, H. H., 111 Milan St., Houston, Tex.
Walsh & Cleary, 213 25th St., Galveston, Tex.
Washington Iron Works, Sherman, Tex.
Wilson, W. T., 116 Franklin St., Waco, Tex.

UTAH.

Haynes, H. E., & Co., 149 W. South Temple St., Salt Lake City, Utah.
Holmes, Samuel, 156 W. South Temple St., Salt Lake City.
Trent Engineering & Machinery Co., Salt Lake City, Utah.

VERMONT.

Holmes, J. H., & Co., Rutland, Vt.
Simmons, H. C., N. Bennington, Vt.

VIRGINIA.

McCabe, George, & Son, 7th and Ohio Sts., Richmond, Va.
McGahey Bros., Elkton, Va.
Pettitt, C. W., Norfolk, Va.
Smith, Courtney Co., 1419 E. Cary St., Richmond, Va.
Talbott & Sons Co., 1519 E. Cary St., Richmond, Va.

WASHINGTON.

Brear, S. D., & Son, 1819 Dock St., Tacoma, Wash.
Brown Bros., Second Ave. and Washington St., Spokane, Wash.
Douglass Bros., Aberdeen, Wash.
Hopkins, Paul, & Son, Ballard, Wash.
Markey, H. W., First Ave. and Charles St., Seattle, Wash.
Molander, E. W., Port Townsend, Wash.
Moran Bros. Co., Railroad Ave., Seattle, Wash.
National Iron Works, Howard St. Bridge, Spokane, Wash.
Norton, William, 2110 A St., Tacoma, Wash.
Puget Sound Dry Dock & Machine Co., 1701 Dock St., Tacoma,
Reed Boiler Works, Bellingham, Wash.
Standard Boiler Works, 1013 First Ave. S., Seattle, Wash.
Todd, John, 1210 Railroad Ave., Seattle, Wash.
Union Iron Works, Cor. Montgomery Ave. and Pearl St., Spokane, Wash.
Vulcan Iron Works Co., cor. Fifth Ave. S. and Seattle Blvd., Seattle, Wash.
Washington Iron Works Co., Seventh Ave. S., Seattle, Wash.
Western Machinery Co., 229 Jackson St., Seattle, Wash.

WEST VIRGINIA.

Munnell, H. E., & Co., Mannington, W. Va.
Ryan, Edward, Sistersville, W. Va.

WISCONSIN.

Fairbanks & Timm, Lake St., Appleton, Wis.
Freeman, S., & Sons, Mfg. Co., Racine, Wis.
Milwaukee Boiler Co., Milwaukee, Wis.
Racine Engine & Iron Works, Racine, Wis.
Vilter Mfg. Co., Milwaukee, Wis.

7 **Horizontal, Portable.** See 6, Tubular Boilers.

8 **Horizontal Stationary.** See 6, Tubular Boilers.

9 **Locomotive.**

CONNECTICUT.

Bridgeport Boiler Works, Bridgeport, Conn.

DELAWARE.

Pusey & Jones Co., Wilmington, Del.

LOCOMOTIVE, continued

GEORGIA.

Lombard Iron Works & Supply Co., Augusta, Ga.

ILLINOIS.

McGarry, Patrick, 1175 So. Paulina St., Chicago, Ill.
Sharkey & Peck, 58 Law Ave., Chicago, Ill.
Springfield Boiler & Mfg. Co., Springfield, Ill.

INDIANA.

Atlas Engine Works, Indianapolis, Ind.
Heilman Machine Works, Evansville, Ind.

IOWA.

Murray Iron Works Co., Burlington, Ia.
Star Boiler Works, Clinton, Ia.

LOUISIANA.

Murphy's, John H., Iron Works, Magazine & Girod Sts., New Orleans, La.

MAINE.

Portland Co., Inc., Portland, Me.

MARYLAND.

Baltimore Marine Railway Machine & Boiler Works, Baltimore.

MASSACHUSETTS.

Allen, Wm., & Sons Co., Worcester, Mass.
Miles Steam Boiler & Plate Iron Works, 102 A St., Boston.
New Bedford Boiler & Machine Co., New Bedford, Mass.
Roberts Iron Works Co., Cambridgeport, Mass.
Russell, Jas., Boiler Works Co., cor. C & 1st Sts., Boston, Mass.
Stewart Boiler Works, Worcester, Mass.
Taunton Locomotive Mfg. Co., Taunton, Mass.

MICHIGAN.

Bay City Boiler Co., Bay City, Mich.
Brennan, John, & Co., Detroit, Mich.
Clark Engine & Boiler Co., Kalamazoo, Mich.

MINNESOTA.

Howell, R. R., & Co., Minneapolis, Minn.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.

MISSOURI.

Fisher & Davis, 1024 N. Main St., St. Louis, Mo.

NEW JERSEY.

Hewes & Phillips, Iron Works, Newark, N. J.
McCabe, Owen, 193 Commerce St., Newark, N. J.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Rogers Locomotive Works, Paterson, N. J.

NEW YORK.

Binghamton Iron Works, Binghamton, N. Y.

LOCOMOTIVE, continued

NEW YORK, Continued.

Farrar & Trefts, Buffalo, N. Y.
Lang, John B., Ithaca, N. Y.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Wallabout Steam Boiler Works, Wallabout St. and Wythe Ave., Brooklyn, N. Y.
Watertown Engine Co., Watertown, N. Y.

NORTH CAROLINA.

Mecklenberg Iron Works, Charlotte, N. C.

OHIO.

Biggs Boiler Co., Akron, O.
Houston, Stanwood & Gamble, Cincinnati, O.
Leffel, James & Co., Springfield, O.
McIlvain & Spiegel Boiler & Tank Co., Pearl & Lawrence Sts., Cincinnati, O.
Tudor Boiler Mfg. Co., Cincinnati, O.
Watkins, F. M., Co., Cincinnati, O.

OREGON.

Williamette Iron & Steel Works, Portland, Ore.

PENNSYLVANIA.

Best, John (Estate of), Lancaster, Pa.
Coatesville Boiler Works, Coatesville, Pa.
Erie Engine Works, Erie, Pa.
Farquhar, A. B., Co., Ltd., York, Pa.
Frick Co., Waynesboro, Pa.
Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.
Keeler, E., Company, Williamsport, Pa.
Motter, Geo. F., & Sons, York, Pa.
Nagle Boiler & Engine Co., Erie, Pa.
Oil City Boiler Works, Oil City, Pa.
Oil Well Supply Co., Pittsburg, Pa.
Orr & Sembower, Reading, Pa.
Pennsylvania Boiler Works, Erie, Pa.
Rees, Jas., & Sons Co., Pittsburg, Pa.
Skinner Engine Co., Erie, Pa.
Struthers-Wells Co., Warren, Pa.
Williamson Bros., Richmond and York Sts., Philadelphia, Pa.

RHODE ISLAND.

American & British Mfg. Co., Providence, R. I.

WISCONSIN.

Freeman S.. & Sons, Racine, Wis.
Stevens, A. W., Co., Marinette, Wis.
Vilter Mfg. Co., Milwaukee, Wis.

10 **Marine.**

ALABAMA.

Richardson & Godard Mobile, Ala.

CALIFORNIA.

Keystone Boiler Works, Main and Folsom Sts., San Francisco, Cal.

MARINE, continued

CALIFORNIA, Continued.

Union Iron Works, San Francisco, Cal.

CONNECTICUT.

Bigelow Co., New Haven, Conn.
Bridgeport Boiler Works, Bridgeport, Conn.

DELAWARE.

Harlan & Hollingsworth Co., Wilmington, Del.
Pusey & Jones Co., Wilmington, Del.

FLORIDA.

Merrill-Stevens Engineering Co., Jacksonville, Fla.

ILLINOIS.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
McGarry, Patrick, 1175 So. Paulina St., Chicago, Ill.
Marine Iron Works, Clyburn & Southport Aves., Chicago, Ill.
Sharkey & Peck, 58 Law Ave., Chicago, Ill.
Willard, Charles P., & Co., 2 S. Canal St., Chicago, Ill.

IOWA.

Iowa Iron Works Co., Dubuque, Iowa.
Murray Iron Works Co., Burlington, Ia.
Star Boiler Works, Clinton, Ia.

KENTUCKY.

Vogt, Henry, Machine Co., Louisville, Ky.

LOUISIANA.

Murphy's, John H., Iron Works, Magazine & Girod Sts., New Orleans, La.

MAINE.

Portland Co., Inc., Portland, Me.

MARYLAND.

Baltimore Marine Railway Machine & Boiler Works, Baltimore.
Baltimore Ship Building & Dry Dock Co., Locust Point, Baltimore, Md.
Codd, E. J., Co., Baltimore, Md.
Maryland Steel Co., Marine Dept., Baltimore, Md.

MASSACHUSETTS.

Allen, Wm., & Sons Co., Worcester, Mass.
Atlantic Works, 70 Border St., E. Boston, Mass.
Clark, E. S., 272 Freeport St., Boston, Mass.
Miles Steam Boiler & Plate Works, 102 A St., Boston, Mass.
Roberts Iron Works Co., Cambridgeport, Mass.
Russell, Jas., Boiler Works Co., Cor. C and 1st Sts., Boston.

MICHIGAN.

Bay City Boiler Co., Bay City, Mich.
Clark Engine & Boiler Co., Kalamazoo, Mich.
Detroit Screw Works, Detroit, Mich.
Dutton, C. H., Co., Kalamazoo, Mich.

MARINE, continued

MICHIGAN, Continued.

Manistee Iron Works Co., Manistee, Mich.
Truscott Boat Mfg. Co., St. Joseph, Mich.
Wickes Bros., Saginaw, Mich.

MINNESOTA.

Howell, R. R., & Co., Minneapolis, Minn.

NEW JERSEY.

Rogers, John M., Boat, Gauge & Drill Works, Gloucester City, N. J.

NEW YORK.

Babcock & Wilcox Co., 85 Liberty St., New York.
Coldwell, Wilcox Co., Newburgh, N. Y.
Cunningham, Christopher, Greenpoint Ave., Brooklyn, N. Y.
Farrar & Trefts, Buffalo, N. Y.
Fitzgibbons Boiler Co., Oswego, N. Y.
Gas Engine & Power Co., and Chas. L. Seabury & Co., Morris Heights, N. Y.
Jamestown Boiler Works, Jamestown, N. Y.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Lake Erie Engineering Works, Buffalo, N. Y.
Mosher Water Tube Boiler Co., 1 Broadway, New York.
Nichols, D. M., 2 Gouverneur Slip, New York.
Novelty Steam Boiler Works, Greenpoint Ave. and Newtown Creek, Brooklyn, N. Y.
Quintard Iron Works, 742 E. 12th St., New York.
White, Robert, Engineering Co., Foot Columbia St., Brooklyn.

OHIO.

Gem City Boiler Co., Dayton, O.
McIlvain & Spiegel Boiler & Tank Co., Pearl & Lawrence Sts., Cincinnati, O.
Middleport Boiler Works, Middleport, O.
River Machine & Boiler Co., Cleveland, O.

PENNSYLVANIA.

Best, John (Estate of), Lancaster, Pa.
Coatesville Boiler Works, Coatesville, Pa.
Cramp, Wm., & Sons, Beach & Ball Sts., Philadelphia, Pa.
Keeler, E., Co., Williamsport, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philda.
Oil City Boiler Works, Oil City, Pa.
Pennsylvania Boiler Works, Erie, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Rees, Jas., & Sons Co., Pittsburg, Pa.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Williamson Bros., Richmond and York Sts., Philadelphia.

RHODE ISLAND.

Almy Water Tube Boiler Co., Providence, R. I.

SOUTH CAROLINA.

Charleston Iron Works, Charleston, S. C.

11 **Return Tubular.** Similar to return flue boilers, but having tubes which are smaller than flues.

CALIFORNIA.

Fulton Iron Works, San Francisco, Cal.

CONNECTICUT.

Bigelow Co., New Haven, Conn.
Bridgeport Boiler Works, Bridgeport, Conn.

DELAWARE.

Harlan & Hollingsworth Co., Wilmington, Del.
Pusey & Jones, Wilmington, Del.

GEORGIA.

Lombard Iron Works & Supply Co., Augusta, Ga.

IOWA.

Murray Iron Works Co., Burlington, Ia.
Star Boiler Works, Clinton, Ia.

KENTUCKY.

Vogt, Henry Machine Co., Louisville, Ky.

LOUISIANA.

Murphy's, John H., Iron Works, Magazine & Girod Sts., New Orleans, La.

MAINE.

Portland Co., Inc., Portland, Me.

MASSACHUSETTS.

Atlantic Works, 70 Border St., E. Boston, Mass.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.

MICHIGAN.

Clark Engine & Boiler Co., Kalamazoo, Mich.
Dutton, C. H., Kalamazoo, Mich.
Wickes Bros. Saginaw Mich.

MINNESOTA.

Howell R. R., & Co., Minneapolis, Minn.
Livermore, F. D., Rochester, Minn.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.

MISSOURI.

Freeman Foundry & Machine Works, Joplin, Mo.
Urie Boiler & Machine Co., Kansas City, Mo.

NEW YORK.

Ames Iron Works, Oswego, N. Y.
Beggs, Jas., & Co., 9 Dey St., New York.
Dederick's, P. K., Sons, Albany, N. Y.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Watertown Engine Co., Watertown, N. Y.

RETURN TUBULAR, continued

NORTH CAROLINA.

Mecklenburg Iron Works, Charlotte, N. C.

OHIO.

Gem City Boiler Co., Dayton, O.
Leffel, Jas., & Co., Springfield, O.
McIlvain & Spiegel Boiler & Tank Co., Pearl & Lawrence Sts., Cincinnati, O.
Mansfield Engineering Co., Mansfield, O.
Rarig Engineering Co., Columbus, O.

PENNSYLVANIA.

Best, John (Estate of), Lancaster, Pa.
Coatesville Boiler Works, Coatesville, Pa.
Erie City Iron Works, Erie, Pa.
Ervien, C. W., & Co., Memphis St., near E. Columbia Ave., Philadelphia, Pa.
Farquhar, A. B., Co., Ltd., York, Pa.
Finch Mfg. Co., Scranton, Pa.
Frick Co., Waynesboro, Pa.
Geiser Mfg. Co., Waynesboro, Pa.
Keeler, E., Co., Williamsport, Pa.
Larzelere Machine Co., Williamsport, Pa.
Nagle Boiler & Engine Co., Erie, Pa.
Pennsylvania Boiler Works, Erie, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Oil City Boiler Works, Oil City, Pa.
Reilly & Fearon, 1154 N. 3d St., Philadelphia, Pa.
Wetherill, Robert, & Co., Chester, Pa.

TENNESSEE.

Casey & Hedges Mfg. Co., Chattanooga, Tenn.
Southern Engine & Boiler Works, Jackson, Tenn.

WISCONSIN.

Freeman, S., & Sons Mfg. Co., Racine, Wis.
Vilter Mfg. Co., Milwaukee, Wis.

12 **Scotch.** Cylindrical internally fired boilers, having a cylindrical fire box and return tubes.

ALABAMA.

Richardson & Godard, Mobile, Ala.

CALIFORNIA.

Fulton Iron Works, San Francisco, Cal.

CONNECTICUT.

Bigelow Co., New Haven, Conn.

DELAWARE.

Harlan & Hollingsworth, Wilmington, Del.
Pusey & Jones Co., Wilmington, Del.

SCOTCH, continued

ILLINOIS.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Springfield Boiler & Mfg. Co., Springfield, Ill.

INDIANA.

Richmond Machine Works, Richmond, Ind.

IOWA.

Murray Iron Works Co., Burlington, Ia.
Star Boiler Works, Clinton, Ia.

KENTUCKY.

Vogt, Henry, Machine Co., Louisville, Ky.

LOUISIANA.

Murphy's, John H., Iron Works, Magazine & Girod Sts., New Orleans, La.

MAINE.

Portland Co., Inc., Portland, Me.

MASSACHUSETTS.

Atlantic Works, 70 Border St., E. Boston, Mass.
Robb-Mumford Boiler Co., Inc., 170 Summer St., Boston, Mass.
Stewart, C., & Son, Worcester, Mass.

MICHIGAN.

Great Lakes Engineering Works, Detroit, Mach.
Wickes Bros., Saginaw, Mich.

MINNESOTA.

Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.

NEW YORK.

Kingsford Foundry & Machine Works, Oswego, N. Y.
Lake Erie Engineering Works, Buffalo, N. Y.
Parkhurst Compound Steam Boiler Co., Oswego, N. Y.

OHIO.

American Ship Building Co., Cleveland, O.
Gem City Boiler Works, Dayton, O.
Leffel, James, & Co., Springfield, O.
McIlvain & Spiegel Boiler & Tank Co., Pearl & Lawrence Sts., Cincinnati, O.

OREGON.

Williamette Iron & Steel Works, Portland, Ore.

PENNSYLVANIA.

Farquhar, A. B., Co., Ltd., York, Pa.
Keeler, E., Co., Williamsport, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philda.
Oil City Boiler Works, Oil City, Pa.
Pennsylvania Boiler Works, Erie, Pa.

SCOTCH, continued

PENNSYLVANIA, Continued.

Phoenix Iron Works Co., Meadville, Pa.
Rees, Jas., & Sons Co., Pittsburg, Pa.

WISCONSIN.

Freeman, S., & Sons Mfg. Co., Racine, Wis.
Vilter Mfg. Co., Milwaukee, Wis.

13 **Vertical, Portable.** See 6, Tubular Boilers.

14 **Vertical Stationary.** See 6, Tubular Boilers.

15 **WATER TUBE.** Having tubes or pipes for holding the water.

Abendroth & Root Mfg. Co., 99 John St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Almy Water Tube Boiler Co., Providence, R. I.
Atlas Engine Works, Indianapolis, Ind.
Aultman & Taylor Machinery Co., Mansfield, O.
Babcock & Wilcox Co., 85 Liberty St., New York. *See adv. page 108.*
Biggs Boiler Co., Akron, O.
Casey & Hedges Mfg. Co., Chattanooga, Tenn.
Clark, E. S., 272 Freeport St., Boston, Mass.
Clonbrock Steam Boiler Co., Lorraine & Court Sts., Brooklyn.
Cramp Ship & Engine Building Co., Philadelphia, Pa.
Dearing Water Tube Boiler Co., Detroit, Mich.
Delaney, P., & Co., Newburgh, N. Y.
East End Boiler Works, 19 St. Aubin Ave., Detroit, Mich.
Edge Moor Iron Co., Wilmington, Del.
Ehrsam, J. B., & Sons Mfg. Co., Enterprise, Kans.
Erie City Iron Works, Erie, Pa.
Franklin Boiler Works Co., Troy, N. Y.
Gas Engine & Power Co., and Chas. L. Seabury & Co., Morris Heights, N. Y.
Gill, John L., Jr., 204 S. 3d St., Philadelphia, Pa.
Granger, A. D., Co., 95 Liberty St., New York.
Gurney Heater Mfg. Co., 74 Franklin St., Boston, Mass.
Harlan & Hollingsworth Co., Wilmington, Del.
Harrison Safety Boiler Works, 17th & Clearfield Sts., Philda.
Hazleton Boiler Co., Rutherford, N. J.
Heine Safety Boiler Co., 704 Commonwealth Trust Bldg., St. Louis, Mo.
Hyde Bros., & Co., Lewis Bldg., Pittsburg, Pa.
Keeler, E., Co., Williamsport, Pa.
Kewanee Boiler Co., Kewanee, Ill.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
McNeil Boiler Co., Akron, O.
Mansfield Engineering Co. Mansfield, O.
Maryland Steel Co., Baltimore, Md.
Mosher Water Tube Boiler Co., 1 Broadway, New York.
Munroe, R., & Son, Pittsburg, Pa.
Murray Iron Works Co., Burlington, Ia.
Murray & Tregurtha Co., South Boston, Mass.
National Water Tube Boiler Co., New Brunswick, N. J.
Neafie & Levy Ship & Engine Bldg. Works, Philadelphia, Pa.
New York Safety Steam Power Co., 113 Liberty St., N. Y.
Nichols & Langworthy Machine Co., Hope Valley, R. I.

WATER TUBE, continued

Ofeldt, F. W., & Sons, Foot of W. 25th St., Brooklyn, N. Y.
Oil City Boiler Works, Oil City, Pa.
Parker Engine Co., Drexel Bldg., Philadelphia, Pa.
Pollock, Wm. B., & Co., Youngstown, O.
Provuncher Water Tube Boiler Co., 132 Water St., East Providence, R. I.
Roberts Safety Water Tube Boiler Co., 39 Cortlandt St., N. Y.
Rochester Machine Tool Co., Rochester, N. Y.
Russell, Jas., Boiler Works Co., Cor. C & 1st Sts., Boston.
Standard Safety Boiler Co., Marquette Bldg., Chicago, Ill.
Stirling Co., Pullman Bldg., Chicago, Ill.
Struthers-Wells Co., Warren, Pa.
Taylor Water Tube Boiler Co., Detroit, Mich.
Tudor Boiler Mfg. Co., Cincinnati, O.
Union Iron Works, Erie, Pa.
Vogt, Henry, Machine Co., Louisville, Ky.
Ward Water Tube Boiler Co., Chesterton, W. Va.
Wickes Bros., Saginaw, Mich.
Wood, John, Mfg. Co., Conshohocken, Pa.

16 **Marine.** See 15, Water Tube Boilers.

---

17 ENGINES.

18 **AGRICULTURAL.** See 36, Portable.

19 **ARTESIAN AND DEEP WELL.** See 252, Artesian and Deep Well Pumps.

20 **AUTOMATIC, CUT-OFF.** Engines having a valve gear controlled by the governor, so that the point of cut is varied according to the load and steam pressure.

American Engine Co., Bound Brook, N. J.
Ames Iron Works, Oswego, N. Y.
Atlas Engine Works, Indianapolis, Ind.
Aultman & Taylor Machinery Co., Mansfield, O.
Ball Engine Co., Erie, Pa.
Ball & Wood Co., 17 Battery Place, New York.
Brown, C. H., & Co., 21 Main St., Fitchburg, Mass.
Brownell Co., Dayton, O. *See adv. page 105.*
Buckeye Engine Co., Salem, O.
Buffalo Forge Co., Buffalo, N. Y.
Chandler & Taylor Co., Indianapolis, Ind.
Clark Bros., Belmont, N. Y.
Comstock Mfg. Co., Comstock, Mich.
Davenport Foundry & Machine Co., Davenport, Ia.
Erie City Iron Works, Erie, Pa.
Erie Engine Works, Erie, Pa.
Erie Mfg. & Supply Co., Erie, Pa.
Erie Pump & Engine Co., Erie, Pa.

AUTOMATIC CUT-OFF ENGINES, continued

Fitchburg Steam Engine Co., Fitchburg, Mass.
Frick Co., Waynesboro, Pa.
Fulton Iron Works, San Francisco, Cal.
Fulton Iron Works, St. Louis, Mo.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Harrisburg Foundry & Machine Co., Harrisburg, Pa. *See adv. page 126.*
Ide, A. L., & Sons, Springfield, Ill.
Ironton Engine Co., Ironton, O.
Jackson, Byron, Machine Works, San Francisco, Cal.
Kensington Engine Works, Ltd., 245 N. Broad St., Philda.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Krogh Mfg. Co., San Francisco, Cal.
Lane & Bodley Co., Cincinnati, O.
Leffel, James, & Co., Springfield, O.
Liddell Co., Charlotte, N. C.
McIntosh, Seymour & Co., Auburn, N. Y.
Mackintosh, Hemphill & Co., Ltd., Pittsburg, Pa.
Morris Machine Works, Baldwinsville, N. Y.
Murray Iron Works Co., Burlington, Ia.
Nagle Boiler & Engine Co., Erie, Pa.
New York Safety Steam Power Co., 113 Liberty St., N. Y.
Noye Mfg. Co., Buffalo, N. Y.
Oil City Boiler Works, Oil City, Pa.
Payne Co., Elmira, N. Y.
Phoenix Iron Works Co., Meadville, Pa.
Providence Engineering Works, Providence, R. I.
Putnam Machine Co., Fitchburg, Mass.
Racine Engine & Iron Works, Racine, Wis.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Rollins Engine Co., Nashua, N. H.
Russell Engine Co., Massillon, O.
Skinner Engine Co., Erie, Pa.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Stearns Mfg. Co., Erie, Pa.
Straight Line Engine Co., Syracuse, N. Y.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Tod, William, Co., Youngstown, O.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Troy Engine & Machine Co., Troy, Pa.
Twiss, Nelson W., New Haven, Conn.
Valley Iron Works, Williamsport, Pa.
Watertown Engine Co., Watertown, N. Y.
Wellman-Seaver-Morgan Co., Cleveland, O.
Westinghouse Machine Co., Pittsburg, Pa.

21 **High Speed, Automatic.** Adapted to high speed, for electric lighting, etc.

American Blower Co., Detroit, Mich.
Ames Iron Works, Oswego, N. Y.
Anderson Foundry & Machine Works, Anderson, Ind.
Atlas Engine Works, Indianapolis, Ind.
Ball Engine Co., Erie, Pa.
Ball & Wood Co., 17 Battery Place, New York.
Brownell Co., Dayton, O. *See adv. page 105.*

AUTOMATIC HIGH SPEED ENGINES, continued

Buckeye Engine Co., Salem, O.
Buffalo Forge Co., Buffalo, N. Y.
Chase Engine & Mfg. Co., Mattoon, Ill.
Dake Engine Co., Grand Haven, Mich.
Erie City Iron Works, Erie, Pa.
Erie Mfg. & Supply Co., Erie, Pa.
Fitchburg Steam Engine Co., Fitchburg, Mass.
Haberkorn Engine Co., Fort Wayne, Ind.
Harrisburg Foundry & Machine Co., Harrisburg, Pa. *See adv. page 126.*
Ide, A. L., & Sons, Springfield, Ill.
Imperial Engine Co., Painted Post, N. Y.
Ironton Engine Co., Ironton, O.
Kensington Engine Works, 245 N. Broad St., Philadelphia, Pa.
Larzelere Machine Co., Williamsport, Pa.
Leffel, J., & Co., Springfield, O.
Link, E. M., Machinery Co., Erie, Pa.
McIntosh, Seymour & Co., Auburn, N. Y.
Mansfield Engineering Co., Mansfield, O.
Mietz, August, 128 Mott St., New York.
Nagle Boiler & Engine Co., Erie, Pa.
New Britain Machine Co., New Britain, Conn. *See adv. page 107.*
New York Safety Steam Power Co., 113 Liberty St., New York.
Nichols & Langworthy Machine Co., Hope Valley, R. I.
Oil City Boiler Works, Oil City, Pa.
Payne Co., Elmira, N. Y.
Phoenix Iron Works Co., Meadville, Pa.
Racine Engine & Iron Works, Racine, Wis.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Rochester Machine Tool Co., Rochester, N. Y.
Russell Engine Co., Massillon, O.
Skinner Engine Co., Erie, Pa.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Straight Line Engine Co., Syracuse, N. Y.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Twiss, Nelson W., New Haven, Conn.
Watertown Engine Co., Watertown, N. Y.
Westinghouse Machine Co., Pittsburg, Pa.

22 **BLOWING.** Having air cylinders for supplying air to blast furnaces, etc.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atlas Engine Works, Indianapolis, Ind.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Buckeye Engine Co., Salem, O.
Deane Steam Pump Co., Holyoke, Mass.
Lane & Bodley Co., Cincinnati, O.
Mackintosh, Hemphill & Co., Ltd., Pittsburg, Pa.
Mesta Machine Co., Pittsburg, Pa.
National Foundry & Machine Co., Louisville, Ky.
Racine Engine & Iron Works, Racine, Wis.
Rarig Engineering Co., Columbus, O.
Snider-Hughes Co., Cleveland, O.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.

BLOWING ENGINES, continued

Tod, William, Co., Youngstown, O.
Weimer Machine Works Co., Lebanon, Pa.
Wells, F. C., Estate of, 116 Clinton St., Chicago, Ill.

23 **COMPOUND.** In which the steam expands in two stages passing through two or more cylinders.

Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Engine Co., Bound Brook, N. J.
American & British Mfg. Co., Providence, R. I.
Atlantic Works, 70 Border St., E. Boston, Mass.
Atlas Engine Works, Indianapolis, Ind.
Aultman & Taylor Machinery Co., Mansfield, O.
Ball Engine Co., Erie, Pa.
Ball & Wood Co., 17 Battery Place, New York.
Barnes, Charles, Co., 53 Main St., Cincinnati, O.
Buckeye Engine Co., Salem, O.
Buffalo Forge Co., Buffalo, N. Y.
Chandler & Taylor Co., Indianapolis, Ind.
Cooper, C. & G., Co., Mt. Vernon, O.
Edwards, Jos., & Co., 412 Water St., New York.
Erie City Iron Works, Erie, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Fischer Foundry & Machine Co., Pittsburg, Pa.
Fishkill Landing Machine Co., Fishkill-on-Hudson, N. Y.
Fitchburg Steam Engine Co., Fitchburg, Mass.
Frick Co., Waynesboro, Pa.
Great Lakes Engineering Works, Detroit, Mich.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Harris, Wm. A., Steam Engine Co., Providence, R. I.
Harrisburg Foundry & Machine Co., Harrisburg, Pa. *See adv. page 126.*
Hewes & Phillips Iron Works, Newark, N. J.
Hooven, Owens, Rentschler Co., Hamilton, O.
Houston, Stanwood & Gamble, Cincinnati, O.
Huber Mfg. Co., Marion, O.
Ide, A. L., & Sons, Springfield, Ill.
Krogh Mfg. Co., San Francisco, Cal.
Lane & Bodley Co., Cincinnati, O.
McIntosh, Seymour & Co., Auburn, N. Y.
Mansfield Engineering Co., Mansfield, O.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philadelphia, Pa.
Newburg Ice Machine & Engine Co., Newburg, N. Y.
Noye Mfg. Co., Buffalo, N. Y.
Oil City Boiler Works, Oil City, Pa.
Payne Co., Elmira, N. Y.
Phoenix Iron Works Co., Meadville, Pa.
Providence Engineering Works, Providence, R. I.
Quincy Engine Works, Quincy, Ill.
Rarig Engineering Co., Columbus, O.
Reeves Engine Co., Trenton, N. J.
Russell Engine Co., Massillon, O.
St. Louis Iron Machine Works, St. Louis, Mo.

COMPOUND ENGINES, continued

Shepherd Engine Co., Franklin, Pa.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Tod, Wm., Co., Youngstown, O.
Union Iron Works, San Francisco, Cal.
Watertown Engine Co., Watertown, N. Y.
Watts-Campbell Co., Newark, N. J.
Weimer Machine Works Co., Lebanon, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.
Westinghouse Machine Co., Pittsburg, Pa.
Wetherill, Robert, & Co., Chester, Pa.

24 **CORLISS.** Having four semi-rotary valves and a drop cut-off valve gear controlled by the governor.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American & British Mfg. Co., Providence, R. I.
Atlas Engine Works, Indianapolis, Ind.
Ball Engine Co., Erie, Pa.
Ball & Wood Co., 17 Battery Place, New York.
Bass Foundry & Machine Co., Fort Wayne, Ind.
Bates Machine Co., Joliet, Ill.
Brown Corliss Engine Co., Corliss, Wis.
Clark Bros, Belmont, N. Y.
Cooper, C. & G., Co., Mt. Vernon, O.
Cox & Sons Co., Bridgeton, N. J.
Erie City Iron Works, Erie, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Fishkill Landing Machine Co., Fishkill-on-Hudson, N. Y.
Frick Co., Waynesboro, Pa.
Fulton Iron Works, St. Louis, Mo.
Griffith & Wedge Co., Zanesville, O.
Hardie-Tynes Foundry & Machine Co., Birmingham, Ala.
Harrisburg Foundry & Machine Co., Harrisburg, Pa. *See adv. page 126.*
Harris, Wm. A., Steam Engine Co., Providence, R. I.
Hendrie & Bolthoff Steam Mfg. & Supply Co., Denver, Col.
Hewes & Phillips Iron Works, Newark, N. J.
Hooven, Owens, Rentschler Co., Hamilton, O.
Kenney & Co., Scottdale, Pa.
Knowlson & Kelley, Troy, N. Y.
Lane & Bodley Co., Cincinnati, O.
Mesta Machine Co., Pittsburg, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Murray Iron Works Co., Burlington, Ia.
Nagle Boiler & Engine Co., Erie, Pa.
Newburg Ice Machine & Engine Co., Newburg, N. Y.
Portland Co., Inc., Portland, Me.
Providence Engineering Works, Providence, R. I.
Rarig Engineering Co., Columbus, O.
Remington Machine Co., Wilmington, Del.
St. Louis Iron & Machine Works, St. Louis, Mo.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Tod, William, Co., Youngstown, O.
Totten & Hogg Iron & Steel Foundry Co., Pittsburg, Pa.

CORLISS ENGINES, continued

Twiss, Nelson W., New Haven, Conn.
Vilter Mfg. Co., Milwaukee, Wis.
Watertown Engine Co., Watertown, N. Y.
Watts-Campbell Co., Newark, N. J.
Weimer Machine Works Co., Lebanon, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.
Wetherill, Robert, & Co., Chester, Pa.

25 **Compound.** See 23, Compound Engines.

26 **CUT-OFF.** See 20, Automatic Cut-Off Engines.

27 **DECK.** See 30, Hoisting Engines.

28 **DERRICK.** See 30, Hoisting Engines.

29 **GAS AND GASOLINE.** Of the internal combustion class, using gas, gasoline or oil for the motive power, instead of steam.

Advance Mfg. Co., Hamilton, O.
Ajax Iron Works, Corry, Pa.
Alamo Mfg. Co., Hillsdale, Mich.
Albion Engine & Motor Co., Albion, Mich.
Alexander & Crouch, 70 W. Monroe St., Chicago, Ill.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Allman Gas Engine & Machine Co., 29-31 Sullivan St., N. Y.
American Engineering Co., Springfield, O.
American Gas Engine Co., Portland, Me.
American & British Mfg. Co., Providence, R. I.
Amstutz & Osborn Co., Caxton Bldg., Cleveland, O.
Anderson Tool Co., Anderson, Ind.
Anderson, Carl, Co., 23 N. Clinton St., Chicago, Ill.
Ashurst Press Drill Co., Havana, Ill.
Ayres Gasoline Engine & Motor Works, Saginaw, Mich.
Backus Water Motor Co., 172 Pennsylvania Ave., Newark, N. J.
Barrauth Bros., Springfield, O.
Bass Fdry. & Mche. Co., Fort Wayne, Ind.
Bates & Edmonds Motor Co., Lansing, Mich.
Bauer Machine Works Co., Kansas City, Mo.
Bay State Gas Engine Co., Merrimac St., Boston, Mass.
Beilfuss Motor Co., Lansing, Mich.
Benton Harbor Machine Co., Benton Harbor, Mich.
Bassemer Gas Engine Co., Grove City, Pa.
Best Mfg. Co., San Leandro, Cal.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Bronbacher, Max H. C., Buffalo, N. Y.
Brown, Cochrane Co., Lorain, O.
Brunner, Chas., Peru, Ill.
Buckeye Gas & Gasoline Engine Co., Aurora, Ill.
Buffalo Engine Co., Buffalo, N. Y.
Callahan, W. P., & Co., Dayton, O.
Capital Gas Engine Co., Indianapolis, Ind.
Cedar Rapids Foundry & Machine Co., Cedar Rapids, Iowa.
Central City Iron Works, Stevens Point, Wis.
Charter Gas Engine Co., Sterling, Ill.
Chelsea Mfg. Co., Chelsea, Mich.
Clifton Motor Works, 229 E. Clifton Ave., Cincinnati, O.
Collins, F. F., Mfg. Co., San Antonio, Texas.

GAS AND GASOLINE ENGINES, continued

Colonial Foundry & Machine Co., S. Norwalk, Conn.
Columbus Machine Co., Columbus, O. *See adv. page 118.*
Cook Mfg. Co., Albion, Mich.
Corliss Gas Engine Co., 227 Folsom St., San Francisco, Cal.
Cushman Motor Co., Lincoln, Neb.
Dayton Gas Engine Co., Dayton, O.
Dempster Mill Mfg. Co., Beatrice, Neb.
Des Moines Gas Engine & Electric Co., Des Moines, Ia.
Dissinger, C. H. A., & Bro., Wrightsville, Pa.
Domestic Engine Co., Hagerstown, Md.
Du Bois Iron Works, Du Bois, Pa.
Dyke, A. L., 1402 Pine St., St. Louis, Mo.
Eagle Bicycle Mfg. Co., Corrington, Conn.
Ellington Mfg. Co., Quincy, Ill.
Ellingworth & Lance, Utica, N. Y.
Elmore Mfg. Co., Clyde, O.
Elyria Gas Engine Co., Elyria, O.
Fairbanks Co., Broome & Elm Sts., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Fauber Mfg. Co., Elgin, Ill.
Fay & Bowen Engine Co., Geneva, N. Y.
Flint & Walling Mfg. Co., Kendallville, Ind.
Foos Gas Engine Co., Springfield, O.
Forsyth, William, & Son, West Lynn, Mass.
Fort Wayne Foundry & Machine Co., Fort Wayne, Ind.
Garrett Machine Works, Garrett, Ind.
Gas Engine & Power Co., & Chas. Seabury Co., Morris Heights, New York.
Geiser Mfg. Co., Waynesboro, Pa.
Gemmer Engine & Mfg. Co., Marion, Ind.
General Power Co., 81 Fulton St., New York.
Globe Iron Works Co., Minneapolis, Minn.
Good Gas Engine Co., Dayton, O.
Grand Rapids Gas Engine & Yacht Co., Grand Rapids, Mich.
Gray & Prior Machine Co., Hartford, Conn.
Hart, Parr, Co., Charles City, Ia.
Hercules Gas Engine Works, San Francisco, Cal.
Hick's, E. G., Gasoline Engine Co., Minneapolis, Minn.
Homan, J. & E., 378 West Broadway, New York.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
International Motor Co., St. Louis, Mo.
Jacobson Machine Mfg. Co., Warren, Pa.
Jamieson, M. W., & Co., Warren, Pa.
Kelly, O. S., Western Mfg. Co., Iowa City, Ia.
Keystone Gas Engine Co., New Brighton, Pa.
King, Chas. B., Co., Detroit, Mich.
King, Quick & Gerber, Paterson, N. J.
Kling Bros., 287 Hawthorne Ave., Chicago, Ill.
Kumberger & Vreeland, 33 Sullivan St., New York.
Lambert Gas & Gasoline Engine Co., Anderson, Ind.
Lansing Motor & Pump Co., Lansing, Mich.
Lazier Gas Engine Co., Buffalo, N. Y.
Leland & Faulconer, 480 Trombly Ave., Detroit, Mich.
Link, E. M., Machinery Co., Erie, Pa.
Loomis, Frank W., 403 Canal St., New York.
Lowell Model Co., No. Chelmsford, Mass.
Lozier Motor Co., 1 Broadway, New York.

GAS AND GASOLINE ENGINES, continued

Lyons Engine Co., Lyons, Mich.
Marinette Iron Works, Mfg. Co., Marinette, Wis.
Mietz, August, 128-138 Mott St., New York.
Middletown Machine Co., Middletown, O.
Miller Improved Gas Engine Co., Springfield, O.
Model Gas Engine Co., Auburn, Ind.
Moline Pump Co., Moline, Ill.
Murray & Tregurtha Co., South Boston, Mass.
National Engineering Co., Saginaw, Mich.
National Gear Wheel & Fdry. Co., Allegheny, Pa.
National Meter Co., 84-86 Chambers St., New York.
Neustadt-Perry Co., 826 S. 18th St., St. Louis, Mo.
New Era Gas Engine Co., Dayton, O.
Northern Engineering Works, 3 Chene St., Detroit, Mich.
North Star Mfg. Co., Minneapolis, Minn.
Northwestern Iron Works, Seattle, Wash.
Oakes, William L., Decatur, Ill.
Ofeldt, F. W., & Sons, Foot W. 25th St., Brooklyn, N. Y.
Ohio Electric Works, Cleveland, O.
Ohio Motor Co., Sandusky, O.
Oil City Boiler Works, Oil City, Pa.
Oil Well Supply Co., Pittsburg, Pa.
Olds Motor Works, Detroit, Mich.
Otto Gas Engine Works, 33d & Walnut Sts., Philadelphia, Pa.
Oxford Mfg. Co., Oxford, Pa.
Palmer Bros., Mianus, Conn.
Pease Engine & Machine Works, Goshen, Ind.
Peerless Motor Co., Lansing, Mich.
Pennsylvania Iron Works, 50th St. & Lancaster Ave., Philda.
Perkins Launch & Motor Co., Gloucester, Mass.
Pierce-Crouch Engine Co., New Brighton, Pa.
Pierce Engine Co., Racine, Wis.
Pittsburg Gas Engine Co., Pittsburg, Pa.
Pohl, Geo. D., Mfg. Co., Vernon, N. Y.
Power & Mining Mchy. Co., 52 William St., New York.
Prouty Gasoline Locomotive Co., Lansing, Mich.
Prox & Brinkman, Mfg. Co., Terre Haute, Ind.
Racine Engine & Iron Works, Racine, Wis.
Reynolds, Graves & Co., Joplin, Mo.
Richmond & Holmes, St. Johns, Mich.
Roberts Engineering Co., Pittsburg, Pa.
Roberts Machine Co., East Palestine, O.
Robertson Mfg. Co., 1451 Niagara St., Buffalo, N. Y.
Root & Vandervoort Engineering Co., Champaign, Ill.
Royal Equipment Co., Bridgeport, Conn.
Ruger, J. W., Mfg. Co., Buffalo, N. Y.
Rusden Machine Co., Warren, R. I.
Sarvent Marine Engine Works, 26 W. Randolph St., Chicago.
Scott Motor Works, 2112 Washington Ave., St. Louis, Mo.
Sintz Gas Engine Co., Detroit, Mich.
Sipp Electric & Machine Works, Paterson, N. J.
Skillin & Richards Mfg. Co., 127 Fulton St., Chicago, Ill.
Smalley Motor Co., Bay City, Mich.
Smith, W. R., 262 W. 52d St., New York.
Spade Engine Co., Vicksburg, Mich.
Springfield Gas Engine Co., Springfield, O.
Standard Motor Co., Kokomo, Ind.

GAS AND GASOLINE ENGINES, continued

Standard Pump & Engine Co., Cleveland, O.
Sterling Engine Co., Buffalo, N. Y.
Stover Engine Co., Freeport, Ill.
Struthers-Wells Co., Warren, Pa.
Superior Gas Engine Co., Springfield, O.
Thomas, E. R., Motor Co., Buffalo, N. Y.
Thomas, Richard H., 107 Liberty St., New York.
Thompson, J., & Sons, Mfg. Co., Beloit, Wis.
Titusville Iron Co., Titusville, Pa.
Trebert, H. L. F., & Co., Rochester, N. Y.
Truscott Boat Mfg. Co., St. Joseph, Mich.
Union Gas Engine Co., San Francisco, Cal.
Utica Gas Engine Works, Utica, N. Y.
Wall, R. C., Mfg. Co., 1334 Race St., Philadelphia, Pa.
Waltham Mfg. Co., Waltham, Mass.
Waterloo Motor Works, Waterloo, Ia.
Watkins, F. M., Cincinnati, O.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.
Welsh, F., 276-277 West St., New York.
Western Malleable & Grey Iron Mfg. Co., Milwaukee, Wis.
Westinghouse, Church, Kerr & Co., 8 Bridge St., New York.
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.
Whipple Cycle Co., 260 W. Jackson Blvd., Chicago, Ill.
White-Blakeslee Mfg. Co., Birmingham, Ala.
White & Middleton Gas Engine Co., Baltimore, Md.
Winkley Engineering Co., Lynn, Mass.
Witte Iron Works, Kansas City, Mo.
Wogaman Mfg. Co., Greenville, O.
Wolverine Motor Works, Grand Rapids, Mich.
Woolley Foundry & Machine Works, Anderson, Ind.

30 HOISTING. Reversing engines for mines, derricks, pile-drivers, coal handling, loading vessels, etc. Generally used in pairs.

Adams, W. T., Machine Co., Corinth, Miss.
Allentown Foundry & Machine Works, Allentown, Pa.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Allman Gas Engine & Machine Co., 29-31 Sullivan St., N. Y.
Anderson, W. H., & Sons, Inc., Detroit, Mich.
Atlantic Works, 70 Borden St., E. Boston, Mass.
Atlas Engine Works, Indianapolis, Ind.
Aultman & Taylor Machinery Co., Mansfield, O.
Bayley, William, & Sons Co., Milwaukee, Wis.
Best, John (Estate of), Lancaster, Pa.
Brown Hoisting Machinery Co., Cleveland, O.
Bucyrus Co., So. Milwaukee, Wis.
Byers, John F., Machine Co., Ravenna, O.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Chandler & Taylor Co., Indianapolis, Ind.
Contractor's Plant Mfg. Co., Buffalo, N. Y.
Cooper, C. & G., Co., Mount Vernon, O.
Crawford & McCrimmon, Brazil, Ind.
Curry & Vannan, Danville, Pa.
Dake Engine Co., Grand Haven, Mich.
Dederick's, P. K., Sons, Albany, N. Y.
Dutton, C. H., Co., Kalamazoo, Mich.
Edwards, Joseph, & Co., 412 Water St., New York.

HOISTING ENGINES, continued

Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Finch Mfg. Co., Scranton, Pa.
Flory, S., Mfg. Co., Bangor, Pa.
Frick Co., Waynesboro, Pa.
Fuller Iron Works, Providence, R. I.
Glover Machine Works, Marietta, Ga.
Great Lakes Engineering Works, Detroit, Mich.
Griffith & Wedge Co., Zanesville, O.
Hardie-Tynes Foundry & Machine Co., Birmingham, Ala.
Heilman Machine Works, Evansville, Ind.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Herbertson's, J., Sons, Cadwallader, Pa.
Hercules Gas Engine Works, San Francisco, Cal.
Hunt, C. W., Co., 45 Broadway, New York.
Kendall, Edward, & Sons, Cambridgeport, Mass.
Kenney & Co., Scottdale, Pa.
Knowlson & Kelley Troy N. Y.
Lambert Hoisting Engine Co. Newark, N. J.
Lane & Bodley Co., Cincinnati, O.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Litchfield Foundry & Machine Works, Litchfield, Ill.
McKeown, H. J., Cincinnati, O. *See adv. page 118.*
Mayer Bros., Mankato, Minn.
Mecklenburg Iron Works, Charlotte, N. C.
Mietz, August, 128 Mott St., New York.
Monighan's Machine Works, 813 Carroll Ave., Chicago, Ill.
Morris County Machine & Iron Co., Dover, N. J.
Morris Machine Works, Baldwinsville, N. Y.
Motter, Geo. F., & Sons, York, Pa.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Murray Iron Works Co., Burlington, Ia.
Nadig, H., & Bro., Mfg. Co., Allentown, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philadelphia, Pa.
Northwestern Iron Works, Seattle, Wash.
Norton & Cole Machinery Co., Cincinnati, O.
Oil City Boiler Works, Oil City, Pa.
Ottumwa Iron Works, Ottumwa, Ia.
Pacific Iron Works, Bridgeport, Conn.
Pawling & Harnischfeger, Milwaukee, Wis.
Portland Co., Inc., Portland, Me.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.
Racine Engine & Iron Works, Racine, Wis.
Rarig Engineering Co., Columbus, O.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.
Roberts Engineering Co., Pittsburg, Pa.
Sintz Gas Engine Co., Detroit, Mich.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Superior Iron Works, West Superior, Wis.
Tod, William, Co., Youngstown, O.
Toledo Foundry & Machine Co., Toledo, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Vulcan Iron Works, San Francisco, Cal.
Wellman-Seaver-Morgan Co., Cleveland, O.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Weimer Machine Works Co., Lebanon, Pa.

HOISTING ENGINES, continued

Willamette Iron & Steel Works, Portland, Ore.
Williamson Bros., Richmond & York Sts., Philadelphia, Pa.

31 HYDRAULIC. Operated by water pressure.

Morse, Williams & Co., Frankford Ave., Shockamaxon St., Philadelphia, Pa.
Power Specialty Co., Buffalo, N. Y.

32 LOCOMOTIVE. Self-propelling engines.

Akron Electrical Mfg. Co., Akron, O.
American Locomotive Co., 25 Broad St., New York.
Baldwin Locomotive Works, 500 N. Broad St., Philadelphia.
Byers, John F., Machine Co., Ravenna, O.
Climax Mfg. Co., Corry, Pa.
General Electric Co., Schenectady, N. Y.
Lima Locomotive & Machine Co., Lima, O.
Porter, H. K., Co., 547 Ward St., Pittsburg, Pa.
Portland Co., Inc., Portland, Me.
Rees, Jas., & Sons, Co., Pittsburg, Pa.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Rogers Locomotive Co., Paterson, N. J.
Shelby Steel Tube Co., Pittsburg, Pa.
Vulcan Iron Works, San Francisco, Cal.
Wellman-Seaver-Morgan Co., Cleveland, O.
Westinghouse, Church, Kerr & Co., 8 Bridge St., New York.

33 MARINE. For propelling vessels.

Adams, S., & Son, Rome, N. Y.
Adams, W. T., Machine Co., Corinth, Miss.
Allman Gas Engine & Machine Co., 29-31 Sullivan St., N. Y.
Atlantic Works, East Boston, Mass.
Atlas Engine Works, Indianapolis, Ind.
Baltimore Ship Bldg. & Dry Dock Co., Baltimore, Md.
Bath Iron Works, Bath, Me.
Bay City Iron Co., Bay City, Mich.
Bell, David, Engineering Works, Buffalo, N. Y.
Bridgeport Machine & Motor Co., Bridgeport, Conn.
Buffalo Forge Co., Buffalo, N. Y.
Chicago Ship Building Co., 101st St. & Calumet River, Chicago, Ill.
Clark, E. S., 272 Freeport St., Boston, Mass.
Clark Engine & Boiler Co., Kalamazoo, Mich.
Colonial Foundry & Machine Co., S. Norwalk, Conn.
Corliss Gas Engine Co., 227 Folsom St., San Francisco, Cal.
Daimler Mfg. Co., Long Island City, N. Y.
Davenport Foundry & Machine Co., Davenport, Ia.
Delaware Machine Co., Wilmington, Del.
Dutton, C. H., Co., Kalamazoo, Mich.
Erie Pump & Engine Co., Erie, Pa.
Fay & Bowen Engine Co., Geneva, N. Y.
Fore River Ship & Engine Co., Quincy, Mass.
Gas Engine & Power Co., & Chas. L. Seabury Co., Morris Heights, N. Y.
Great Lakes Engineering Works, Detroit, Mich.
Grand Rapids Gas Engine & Yacht Co., Grand Rapids, Mich.
Herbertson's, J., Sons, Cadwallader, Pa.

MARINE ENGINES, continued

Hercules Gas Engine Works, San Francisco, Cal.
Herreshoff Mfg. Co., Bristol, R. I.
Kensington Engine Works, 245 N. Broad St., Philadelphia, Pa.
Kehoe, Wm., & Co., Savannah, Ga.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Lake City Engineering Co., Erie, Pa.
Lowell Model Co., No. Chelmsford, Mass.
Manistee Iron Works Co., Manistee, Mich.
Marine Iron Works, Clybourn & Southport Ave., Chicago, Ill.
Mesta Machine Co., Pittsburg, Pa.
Mianus Motor Works, Mianus, Conn.
Mietz, August, 128 Mott St., New York.
Morris, I. P., Co., Philadelphia, Pa.
Morris Machine Works, Baldwinsville, N. Y.
Motter, Geo. F., & Sons, York, Pa.
Murray Iron Works Co., Burlington, Ia.
Nagle Boiler & Engine Co., Erie, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Phila.
Ohio Machine Co., Middleport, O.
Olin Gas Engine Co., Buffalo, N. Y.
Oil City Boiler Works, Oil City, Pa.
Pennsylvania Iron Works, 50th St. & Lancaster Ave., Philda.
Percy, Chas. W., 212 Summer St., Boston, Mass.
Pierce Engine Co., Racine, Wis.
Portland Co., Inc., Portland, Me.
Pusey & Jones Co., Wilmington, Del.
Queen City Engineering Co., Buffalo, N. Y.
Quintard Iron Works, 742 E. 12th St., New York.
Racine Engine & Iron Works, Racine, Wis.
Rees, Jas., & Sons Co., Pittsburg, Pa.
Reeves Engine Co., Trenton, N. J.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Rochester Machine Tool Co., Rochester, N. Y.
Rusden Machine Co., Warren, R. I.
St. Louis Iron & Machine Works, St. Louis, Mo.
Sheriffs Mfg. Co., Milwaukee, Wis.
Sintz Gas Engine Co., Detroit, Mich.
Sipp Electric & Machine Works, Paterson, N. J.
Skinner & Arnold Co., Albany, N. Y.
Stickney, Henry R., Portland, Me.
Superior Shipbuilding Co., Superior, Wis.
Thropp, John E., & Sons Co., Trenton, N. J.
Toledo Foundry & Machine Co., Toledo, O.
Truscott Boat Mfg. Co., St. Joseph, Mich.
Twiss, Nelson W., New Haven, Conn.
Union Gas Engine Co., San Francisco, Cal.
Union Iron Works, San Francisco, Cal.
Waterloo Motor Works, Waterloo, Ia.
Westinghouse Electric & Mfg. Co., East Pittsburg, Pa.
Willard, Chas. P., & Co., 2 S. Canal St., Chicago, Ill.
Williamette Iron & Steel Works, Portland, Ore.
Williamson Bros., Richmond & York Sts., Philadelphia, Pa.
Wing, L. J., Mfg. Co., 251 West Broadway, New York.
Wolverine Motor Works, Grand Rapids, Mich.

34 **Steering.** For moving the rudder of vessels by steam power, the valves being controlled by the steersman.

Chase Machine Co., Cleveland, O.

MARINE ENGINES, STEERING, continued

Fore River Ship & Engine Co., Quincy, Mass.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philda.
Nichols, D. M., Iron Works, 2 Gouverneur Slip, New York.
Sheriffs Mfg. Co., Milwaukee, Wis.

35 **OIL.** See 29, Gas and Gasoline Engines.

American Diesel Engine Co., 11 Broadway, New York.
Aultman Co., Canton, O.
Best Mfg. Co., San Leandro, Cal.
De La Vergne Refrigerating Machine Co., foot of E. 138th St., New York.
Delaware Machine Co., Wilmington, Del.
General Power Co., 81 Fulton St., New York.
International Power Vehicle Co., Stamford, Conn.
Marine Engine & Machine Co., 80 Broadway, New York.
Mietz, August, 128-138 Mott St., New York.
New York Kerosene Oil Engine Co., 31 Burling Slip, N. Y.
Oil City Boiler Works, Oil City, Pa.
Otto Gas Engine Works, 332 Walnut St., Philadelphia, Pa.
Pittsburg Gas Engine Co., Pittsburg, Pa.
Rochester Machine Tool Co., Ltd., Rochester, N. Y.
Union Gas Engine Co., San Francisco, Cal.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

36 **PORTABLE.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Road Machine Co., Kennett Square, Pa.
Ames Iron Works, Oswego, N. Y.
Armitage-Herschell Co., North Tonawanda, N. Y.
Atlantic Works, East Boston, Mass.
Atlas Engine Works, Indianapolis, Ind.
Aultman Co., Canton, O.
Aultman & Taylor Machinery Co., Mansfield, O.
Best, John (Estate of), Lancaster, Pa.
Best Mfg. Co., San Leandro, Cal.
Brownell Co., Dayton, O. *See adv. page 105.*
Buffalo Pitts Co., Buffalo, N. Y.
Burlingame & Son, Worcester, Mass.
Campbell, S. K., Central Bridge, N. Y.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Case, J. I., Threshing Machine Co., Racine, Wis.
Charter Gas Engine Co., Sterling, Ill.
Colean Mfg. Co., Peoria, Ill
Dederick's, P. K., Sons, Albany, N. Y.
Dennison Electric Engine Co., New Haven, Conn.
Edwards, Jos., & Co., 412 Water St., New York.
Enterprise Mfg. Co., Columbiana, O.
Erie City Iron Works, Erie, Pa.
Erie Engine Works, Erie, Pa.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Farquhar, A. B., Co., Ltd., York, Pa.
Fisher & Davis, 1024 N. Main St., St. Louis, Mo.
Flory, S., Mfg. Co., Bangor, Pa.
Frick Co., Waynesboro, Pa.
Fritz, Geo. J., Foundry & Machine Co., St. Louis, Mo.
Gaar, Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.

PORTABLE ENGINES, continued

Harder Mfg. Co., Cobleskill, N. Y.
Harrisburg Foundry & Machine Co., Harrisburg, Pa. *See adv. page 126.*
Harrison Machine Works, Belleville, Ill.
Heilman Machine Works, Evansville, Ind.
Hench & Dromgold, York, Pa.
Hercules Gas Engine Works, San Francisco, Cal.
Huber Mfg. Co., Marion, O.
Hurlbut, W. M., Winona, Minn.
Jackson, Byron, Machine Works, San Francisco, Cal.
Kingsland Mfg. Co., St. Louis, Mo.
Lambert Gas & Gasoline Engine Co., Anderson, Ind.
Lane & Bodley Co., Cincinnati, O.
Lansing Boiler & Engine Works, Lansing, Mich.
Larzelere Machine Co., Williamsport, Pa.
Leffel, James, & Co., Springfield, O.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
McEwen Bros., Wellsville, N. Y.
Marion Mfg. Co., Marion, O.
Marshutz & Cantrell, San Francisco, Cal.
Mecklenburg Iron Works, Charlotte, N. C.
Messinger Mfg. Co., Tatamy, Pa.
Middletown Machine Co., Middletown, O.
Mietz, August, 128 Mott St., New York.
Morris Machine Works, Baldwinsville, N. Y.
Motter Geo. F., & Sons, York, Pa.
Murray Iron Works Co., Burlington, Ia.
Nagle Engine & Boiler Works, Erie, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philda.
New Birdsall Co., Auburn, N. Y.
Nichols & Shepard Co., Battle Creek, Mich.
Nordyke & Marmon Co., Indianapolis, Ind.
Northwest Thresher Co., Stillwater, Minn.
Norton & Cole Machinery Co, Cincinnati, O.
Oil City Boiler Works, Oil City, Pa.
Phoenix Iron Works, Meadville, Pa.
Portland Co., Inc., Portland, Me.
Rand Drill Co., 128 Broadway, New York.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.
Reeves & Co., Columbus, Ind.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Root & Vandervoort Engineering Co., Champaign, Ill.
Russell Engine Co., Massillon, O.
Salem Iron Works, Salem, N. C.
San Francisco Tool Works, San Francisco, Cal.
Scheidler, Reinhart, Newark, O.
Sinker-Davis Co., Indianapolis, Ind.
Skinner Engine Co., Erie, Pa.
Smalley Mfg. Co., Manitowoc, Wis.
Southern Engine & Boiler Works, Jackson, Tenn
Southwark Foundry & Machine Co, 430 Washington Ave, Philadelphia, Pa.
Spence, L., & Son, Martins Ferry, O.
Stevens, A. W. Co., Marinette, Wis.
Stickney, Chas. A., Co., St. Paul, Minn.
Struthers-Wells Co., Warren, Pa.

PORTABLE ENGINES, continued

Union Machine Co., Zanesville, O.
Waterloo Motor Works, Waterloo, Ia.
Watertown Engine Co., Watertown, N. Y.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
West Point Iron Works, West Point, Ga.
Willard, Chas. P. & Co., 2 S. Canal St., Chicago, Ill.
Williams Bros., Ithaca, N. Y.
Williams, White & Co., Moline, Ill.
Williamson Bros., Richmond & York Sts., Philadelphia, Pa.
Wing, L. J., Mfg. Co., 251 West Broadway, New York.

37 **PUMPING.** See 244, Pumping Engines.

38 **REVERSING.** See 30, Hoisting Engines.

39 **ROLLING MILL.** Reversing engines for driving rolls for working iron, steel, etc.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atlas Engine Works, Indianapolis, Ind.
Brownell Co., Dayton, O.
Cooper, C. & G., Co., Mount Vernon, O.
Filer & Stowell Co., Milwaukee, Wis.
Frick Co., Waynesboro, Pa.
Lane & Bodley Co., Cincinnati, O.
Mesta Machine Co., Pittsburg, Pa.
Minneapolis Steel & Machine Co., 2854 Minnehaha St., Minneapolis, Minn.
Portland Co., Inc., Portland, Me.
Rarig Engineering Co., Columbus, O.
Rees, Jas., & Sons, Co., Pittsburg, Pa.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Spence, L., & Son, Martins Ferry, O.
Totten & Hogg Iron & Steel Foundry Co., Pittsburg, Pa.
Wetherill, Robert, & Co., Chester, Pa.

40 **STEERING.** See 34, Marine Steering Engines.

41 **THROTTLING.** In which the speed is controlled by a fly-ball governor operating a valve in the steam pipe.

Ames Iron Works, Oswego, N. Y.
Best, John (Estate of), Lancaster, Pa.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Chandler & Taylor Co., Indianapolis, Ind.
Continental Gin Co., Birmingham, Ala.
Erie City Iron Works, Erie, Pa.
Erie Mfg. & Supply Co., Erie, Pa.
Frost Mfg. Co., Galesburg, Ill.
Geiser Mfg. Co., Waynesboro, Pa.
Greenwald, I. E., & Co., 720 E. Pearl St., Cincinnati, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Kensington Engine Works, 245 N. Broad St., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Leffel, Jas., & Co., Springfield, O.
Liddell Co., Charlotte, N. C.
Mansfield Engineering Co., Mansfield, O.
Nagle Boiler & Engine Co., Erie, Pa.

THROTTLING ENGINES, continued

Neafie & Levy, Ship & Engine Bldg Co., 1336 Beach St., Philda.
New York Safety Steam Power Co., 113 Liberty St., N. Y.
Olney & Warrin, 36 Dey St., New York.
Oil City Boiler Works, Oil City, Pa.
Phoenix Mfg. Co., Eau Claire, Wis.
Rees, Jas., & Sons, Co., Pittsburg, Pa.
Reilly & Farron, 1154 N. 3d St., Philadelphia, Pa.
Richmond Machine Works, Richmond, Ind.
Smith, Myers & Schnier Co., Cincinnati, O.
Stuʳtevant, B. F., Co., Jamaica Plain, Mass.
Troy Engine & Machine Co., Troy, Pa.
Van Wie, Irvin, Syracuse, N. Y.
Wehrfritz, E. C., Machinery & Supply Co., Little Rock, Ark.
Wing, L. J., Mfg. Co., 251 West Broadway, New York.

42 **TRACTION.** Self-propelling engines mounted on wheels and adapted to travel on ordinary roads.

Advance Thresher Co., Battle Creek, Mich.
Aultman & Taylor Machinery Co., Mansfield, O.
Aultman Co., Canton, O.
Benicia Agricultural Works, Benicia, Cal.
Best Mfg. Co., San Leandro, Cal.
Buffalo Pitts Co., Buffalo, N. Y.
Case, J. I., Threshing Machine Co., Racine, Wis.
Colean Mfg. Co., Peoria, Ill.
Cooper, C. & G., Co., Mount Vernon, O.
Farquhar, A. B., Co. Ltd., York, Pa.
Frick Co., Waynesboro, Pa.
Gaar Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.
Gibbs Engineering & Mfg. Co., Glendale, L. I., N. Y.
Harrison Machine Works, Belleville, Ill.
Hart-Parr Co., Charles City, Ia.
Heilman Machine Works, Evansville, Ind.
Hench & Dromgold, York, Pa.
Holt Mfg. Co., Stockton, Cal.
Huber Mfg. Co., Marion, O.
Jackson, Byron, Machine Works, San Francisco, Cal.
June, D., & Co., Fremont, O.
Keck, Gonnermann & Co., Mt. Vernon, Ind.
Kelly, O. S., Co., Springfield O.
Kingsland Mfg. Co., St. Louis, Mo.
Lang, John B., Ithaca, N. Y.
Marion Mfg. Co., Marion, O.
Massillon Engine & Thresher Co., Massillon, O.
Minnesota Thresher Co., Stillwater, Minn.
New Birdsall Co., Auburn, N. Y.
Nichols & Shepard Co., Battle Creek, Mich.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Prouty Gasoline Locomotive Co., Ltd., Lansing, Mich.
Reeves & Co., Columbus, O.
Robinson & Co., Richmond, Ind.
Rumely, M., Co., La Porte, Ind.
Russell Engine Co., Massillon, O.
Scheidler, Reinhart, Newark, O.
Spence, L., & Son, Martins Ferry, O.
Stevens, A. W., Co., Marinette, Wis.

TRACTION ENGINES, continued

Waterloo Motor Works, Waterloo, Ia.
Watertown Engine Co., Watertown, N. Y.
Westinghouse Co., Schenectady, N. Y.
Williamette Iron & Steel Works, Portland, Ore.
Wing, L. J., Mfg. Co., 251 West Broadway, New York.

43 **TRIPLE EXPANSION.** In which the steam expands in three stages, passing through one or more cylinders.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atlantic Works, 70 Border St., East Boston, Mass.
Ball & Wood Co., 17 Battery Place, New York.
Hewes & Phillips Iron Works, Newark, N. J.
Lane & Bodley Co., Cincinnati, O.
Nagle Engine & Boiler Works, Erie, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philda.
Oil City Boiler Works, Oil City, Pa.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.

43A **TURBINE.** Impulse or reaction motors, the wheel which carries the vanes or buckets being driven by steam escaping from nozzles.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Brady, John F., Turbine Co., 43 Fulton St., Chicago, Ill.
De Laval Steam Turbine Co., 74 Cortlandt St., New York.
General Electric Co., Schenectady, N. Y.
Hooven, Owens & Rentschler Co., Hamilton, O.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.

44 **VERTICAL.** Having the cylinders placed vertically over the crank shaft.

Ball Engine Co., Erie, Pa.
Ball & Wood Co., 17 Battery Place, New York.
Barnes, Charles Co., 53 Main St., Cincinnati, O.
Born, J. C., & Bro., Machine Works, Belleville, Ill.
Burrell, D. H., & Co., Little Falls, N. Y.
Dopp, H. Wm., & Son, Buffalo, N. Y.
Erie Mfg. & Supply Co., Erie, Pa.
International Boiler Works Co., East Stroudsburg, Pa.
Lane & Bodley Co., Cincinnati, O.
Leffel, James, & Co., Springfield, O.
Mansfield Engineering Co., Mansfield, O.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Nagle Boiler & Engine Co., Erie, Pa.
Neafie & Levy Ship & Engine Bldg. Co., 1336 Beach St., Philda.
Oil City Boiler Works, Oil City, Pa.
Olney & Warrin, 36 Dey St., New York.
Pohl, Geo. D., Mfg. Co., Vernon, N. Y.
Quincy Engine Works, Quincy, Ill.
St. Louis Steam Engine Co., St. Louis, Mo.
Shepherd Engine Co., Franklin, Pa.
Superior Iron Works, West Superior, Wis.
Troy Engine & Machine Co., Troy, Pa.
Twiss, Nelson W., New Haven, Conn.
Van Wie, Irvin, Syracuse, N. Y.
Webster Mfg. Co., 1075 West 15th St., Chicago, Ill.

44a MOTORS.

44B **GAS AND GASOLINE.** See 29, Gas and Gasoline Engines.

44C **PNEUMATIC.**

Baird Portable Machine Co., Topeka, Kans.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Empire Engine & Motor Co., Orangeburg, N. Y.
Helwig Mfg. Co., St. Paul, Minn.
Pilling Air Engine Works, Bucyrus, O.
Standard Railway Equipment Co., Union Trust Bldg., St. Louis, Mo.
Stow Flexible Shaft Co., 26th & Callowhill St., Philadelphia.

44D **WATER.**

Backus Water Motor Co., Newark, N. J.
Cassel Auto Water Motor Co., Seattle, Wash.
Pelton Water Wheel Co., 127 Main St., San Francisco, Cal.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Power Specialty Co., Buffalo, N. Y.
Specialty Mfg. Co., Indianapolis, Ind.
Standard Water Meter Co., 245 Robinson St., Brooklyn, N. Y.

---

45 STEAM APPLIANCES IN GENERAL.

46 **ALARMS, LOW WATER.** For automatically signalling when the water in the boiler falls below the proper level.

Clow, J. B., & Sons, Cor. Harrison & Franklin Sts., Chicago.
Erie Mfg. & Supply Co., Erie, Pa.
Griffing, A. A., Iron Co., Jersey City, N. J.
Hills-McCanna Co., 138 E. Kinzie St., Chicago, Ill.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Michigan Lubricator Co., Detroit, Mich.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Reliance Gauge Column Co., Cleveland, O. *See adv. page 117.*
Scranton Steam Pump Co., Scranton, Pa.
Sims Co., Erie, Pa.
Wright Mfg. Co., Detroit, Mich.

46A **CALIPERS, FLUE OR TUBE.** For ascertaining the internal condition of flues or tubes.

Mellor, L. Bancroft, 14 S. 4th St., Philadelphia, Pa.

46B **CIRCULATORS, FEED WATER.** For equalizing the temperature in all parts of a boiler.

Bloomsburg, H., & Co., 700 Dolphin St., Baltimore, Md.

47 **CLAMPS, STEAM.** For stopping leaks in elbows, tees, valves or other fittings.

McCrea, James, & Co., 67 W. Washington St., Chicago, Ill.
Nusbaum, F. A., Dayton, O. *See adv. page 117.*

48 **CLEANERS, BOILER, MECHANICAL.** For cleansing boilers by means of a circulation of water.

Freeport Plumbing & Heating Co., Freeport, Ill.
Gem Mfg. Co., Pittsburg, Pa.
Manchester Mfg. Co., North Manchester, Ind.
Mechanical Boiler Cleaner Co., Western Union Bldg., Chicago.
Sims Co., Erie, Pa.
Standard Boiler Cleaner Co., Quincy, Ill.

49 **Flue or Tube.** For cleansing the flues of boilers.

Boston Brass Co., 36 Oliver St., Boston, Mass.
Bushnell, John S., Co., 126 Liberty St., New York.
Butman Boiler Furnace Co., Monadnock Blk., Chicago, Ill.
Champion Flue Scraper Co., Peoria, Ill.
Cleveland Flue Cleaner Mfg. Co., Cleveland, O.
Cochrane, J. A., Cleveland, O.
Coggeshall Mfg. Co., Branford, Conn.
Doolittle, S. B., & Son, Binghamton, N. Y.
Erie Mfg. & Supply Co., Erie, Pa.
Faries Mfg. Co., Decatur, Ill.
Forest City Brass Works, Cleveland, O.
Gem Mfg. Co., Pittsburg, Pa.
Globe Brass Works, Detroit, Mich.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
Lagonda Mfg. Co., Springfield, O.
Liberty Mfg. Co., Pittsburg, Pa.
McCrae, James, & Co., 67 W. Washington St., Chicago, Ill.
Mann-McCann Co., 1210 Fisher Bldg., Chicago, Ill.
Michigan Lubricator Co., Detroit, Mich.
Maurer, Labadie & Co., South Bend, Ind.
Pedrick & Ayer Co., Plainfield, N. J.
Pierce, William B., Co., Buffalo, N. Y.
Pilley Packing & Flue Brush Mfg. Co., St. Louis, Mo.
Power Specialty Co., Buffalo, N. Y.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Rollins Flue Cleaner Co., Albany, N. Y.
Scranton Steam Pump Co., Scranton, Pa.
Sherwood Mfg. Co., Buffalo, N. Y.
Sims Co., Erie, Pa.
Stephenson Mfg. Co., Albany, N. Y.
Stewart Heater Co., Buffalo, N. Y. *See adv. page 109.*
St. John, G. C., 143 Liberty St., New York.
Thompson, Richard, & Co., 126 Liberty St., New York.
Wing, J. T., & Co., Detroit, Mich.

50 **COCKS, GAGE.** Stop cocks attached to boilers, for indicating the height of the water.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashton Valve Co., 271 Franklin St., Boston, Mass.

COCKS, GAGE, continued

Bailey-Farrell Mfg. Co., Pittsburg, Pa.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Belknap Mfg. Co., Bridgeport, Conn.
Boston Steam Specialty Co., 170 Congress St., Boston, Mass. *See adv. page 116.*
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Chaplin-Fulton Mfg. Co., Pittsburg, Pa.
Cochrane, J. A., Cleveland, O.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
D'Este, Julian Co., 24 Canal St., Boston, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Erie Mfg. & Supply Co., Erie, Pa.
Everhart Brass Works, Scranton, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Farnan Brass Works, Cleveland, O.
Globe Brass Works, Detroit, Mich.
Haydenville Co., Haydenville, Mass.
Hills-McCanna Co., 128 E. Kinzie St., Chicago, Ill.
Homer & Poole, 2311 Race St., Philadelphia, Pa.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 71 John St., New York.
Lehigh Valley Brass Works, South Bethlehem, Pa.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
McNab & Harlin Mfg. Co., 56 John St., New York.
McRae & Roberts Co., Detroit, Mich.
Michigan Lubricator Co., Detroit, Mich.
Ohio Brass Co., Mansfield, O.
Penberthy Injector Co., Detroit, Mich.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Pratt & Cady Co., Hartford, Conn.
Reliable Mfg. Co., Pittsburg, Pa.
Reliance Gauge Column Co., Cleveland, O. *See adv. page 117.*
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Sherwood Mfg. Co., Buffalo, N. Y.
Springfield Brass Co., Springfield, O.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Wright Mfg. Co., Detroit, Mich.

51 **COLUMNS, WATER, PLAIN.** For holding the gage cocks and water glasses.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Best Mfg. Co., Pittsburg, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Griffing, A. A., Iron Co., Jersey City, N. J.
Illinois Malleable Iron Co., 32 W. Monroe St., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
Kelly & Jones Co., Greensburg, Pa.

COLUMNS, WATER, PLAIN, continued

Kitts Mfg. Co., Oswego, N. Y.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Michigan Lubricator Co., Detroit, Mich.
Ohio Brass Co., Mansfield, O.
Pittsburg Gage & Supply Co., Pittsburg, Pa. *See adv. page 113.*
Powell, William, Co., Cincinnati, O.
Queen City Brass & Iron Works, Cincinnati, O.
Reliable Water Gauge Co., 1616 Pine St., St. Louis, Mo.
Rutzler, E., 178 Centre St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.

52 **Water, Safety.** Containing signal apparatus for indicating high or low water.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Best Mfg. Co., Pittsburg, Pa.
Binghamton Machine Tool Works, Binghamton, N. Y.
Clark Bros. Co., Vicksburg, Mich.
Detroit Lubricator Co., Detroit, Mich.
Erie Mfg. & Supply Co., Erie, Pa.
Jarvis Engine & Machine Co., Lansing, Mich.
Kitts Mfg. Co., Oswego, N. Y.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Reliance Gauge Column Co., Cleveland, O. *See adv. page 117.*
Rutzler, E., 178 Centre St., New York.
Scranton Steam Pump Co., Scranton, Pa.
Wright Mfg. Co., Detroit, Mich.

53 **CONDENSERS, STEAM.** For condensing exhaust steam in steam engines.

Ashcroft Mfg. Co., 85 Liberty St., New York.
Atlantic Works, 70 Border St., E. Boston, Mass.
Baragwanath, William, & Son, 54 W. Division St., Chicago, Ill.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Conover Mfg. Co., Jersey City, N. J.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Hammond Iron Works, Warren, Pa.
International Steam Engineering Co., Atlanta, Ga.
International Steam Pump Co., 26 Broadway, New York.
Jeanesville Iron Works Co., Jeanesville, Pa.
Lane & Bodley Co., Cincinnati, O.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
National Oil Burner & Equipment Co., Holland Bldg., St. Louis, Mo.
Nordberg Mfg. Co., Milwaukee, Wis.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Scranton Steam Pump Co., Scranton, Pa.
Springfield Elevator & Pump Co., Springfield, Mass.

CONDENSERS, STEAM, continued

Stewart Heater Co., Buffalo, N. Y. *See adv. page 109.*
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Wheeler Condenser & Engineering Co., 120 Liberty St., N. Y.
Whitlock Coil Pipe Co., Hartford, Conn. *See adv. page 114.*
Worthington, Henry R., 114 Liberty St., New York.

54 **COUNTERS, REVOLUTION.** For registering revolutions, or strokes of reciprocating parts.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Crosby Steam Gauge & Valve Co., 97 Oliver St., Boston, Mass.
Marsh, Jas. P., & Co., 224 Washington St., Chicago, Ill.
Pittsburg Gage & Supply Co., Pittsburg, Pa. *See adv. page 113.*
Root, C. J., Bristol, Conn.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Standard Gauge Mfg. Co., Syracuse, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Tabor Mfg. Co., 18th & Hamilton Sts., Philadelphia, Pa.
Utica Steam Gage Co., Frankfort, N. Y.
Woodman Mfg. & Supply Co., 63 Oliver St., Boston, Mass.

55 **ECONOMIZERS, FUEL.** For utilizing the heat of boiler furnace gases.

Broomell, Schmidt & Steacy Co., Ltd., York, Pa.
Green Fuel Economizer Co., Matteawan, N. Y.
Hussey, McCann & Co., 37 Dey St., New York.
National Oil Burner & Equipment Co., Holland Bldg., St. Louis, Mo.

56 **Steam.**. For absorbing the heat in the chimney gases.
Hussey, McCann & Co., 37 Dey St., New York.

57 **EJECTORS.** For lifting and ejecting fluids by the inductive action of a fluid under pressure.

American Injector Co., Detroit, Mich.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Blakeslee Mfg. Co., Du Quoin, Ill.
Boston Steam Specialty Co., 170 Congress St., Boston, Mass. *See adv. page 116.*
Chaplin-Fulton Mfg. Co., Pittsburg, Pa.
Eagle Lubricator Co., 106 Canal St., Cleveland, O.
Erwin & Co., 35 N. Canal St., Chicago, Ill.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Forest City Brass Works, Cleveland, O.
Griffiths, Jas. A., 500 N. 12th St., Philadelphia, Pa.
Hancock Inspirator Co., 89 Liberty St., New York.
Hayden & Derby Mfg. Co., 89 Liberty St., New York.
Lee Mfg. Co., Port Huron, Mich.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
McGowan, John H., Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Maurer, Labadie & Co., South Bend, Ind.
Nathan Mfg. Co., 92 Liberty St., New York.

EJECTORS, continued

Ohio Injector Co., Wadsworth, O.
Penberthy Injector Co., Detroit, Mich.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Rue Mfg. Co., 215 Race St., Philadelphia, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Sellers, Wm., Co., Philadelphia, Pa.
Sherwood Mfg. Co., Buffalo, N. Y.
Steam Appliance Co., 241 Greenfield Ave., Milwaukee, Wis.
Stephens, Roe, Mfg. Co., Detroit, Mich.
Tranter-Davison Mfg. Co., Pittsburg, Pa.
Van Duzen, E. W., Co., Cincinnati, O.
Van Wie, Irvin, Syracuse, N. Y.
Watson, N. A., Erie, Pa.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa. *See adv. page 114.*
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

58 **ELIMINATORS.** See 128, Separators, Steam.

59 **EXHAUST HEADS.** For catching condensation and oil from steam exhaust pipes, preventing deposits on surroundings.

American Spiral Pipe Works, 1173 S. Paulina St., Chicago, Ill.
Bingham & Co., 1004 Moravian St., Philadelphia, Pa.
Bonar, Jas., & Co., Pittsburg, Pa.
Burt Mfg. Co., Akron, O.
Crawford, P. R., Heating & Mfg. Co., Cleveland, O.
De Rycke, Joseph, 41 Cortlandt St., New York.
Direct Separator Co., Syracuse, N. Y.
Gardner Governor Co., Quincy, Ill.
Griffing, A. A., Iron Co., Jersey City, N. J.
Hoppes Mfg. Co., Springfield, O.
Hussey, McCann & Co., 37 Dey St., New York.
Kelley, Benjamin F., & Son, 91 Liberty St., New York. *See adv. page 116.*
Keystone Engine & Machine Works, 5th & Buttonwood Sts., Philadelphia, Pa.
Lee, Thos., Cincinnati, O.
Lyman, W. C., 49 Michigan St., Chicago, Ill.
McGowan, John H., Co., Cincinnati, O.
Maypole Bros., 60 S. Canal St., Chicago, Ill.
Patterson, Frank L., & Co., 26 Cortlandt St., New York.
Pittsburg Gage & Supply Co., Pittsburg, Pa. *See adv. page 113.*
Prentice, L. H. Co., 24 Sherman St., Chicago, Ill.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Rutzler, E., 178 Centre St., New York.
Sims Co., Erie, Pa.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Thompson, Richard, & Co., 126 Liberty St., New York. *See adv. page 102.*
Variety Mfg. Co., 77 W. Lake St., Chicago, Ill.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa. *See adv. page 114.*
Whitlock Coil Pipe Co., Hartford, Conn. *See adv. page 114.*
Wright Mfg. Co., Detroit, Mich.

60 **EXPANDERS, BOILER TUBE.** For expanding the tubes of boilers.

Bullock, C. K., 1361 Ridge Ave., Philadelphia, Pa.
Dudgeon, Richard, 82 Broome St., New York.
Faessler, John, Mfg. Co., Moberly, Mo.
Hayes, Harrison, Tool Co., Portland, Me.
Henderer's, A. L., Sons, Wilmington, Del.
Lee & Hoff Mfg. Co., St. Paul, Minn.
Oswego Tool Co., Oswego, N. Y.

61 **EXTRACTORS, GREASE.** For extracting oil or grease from steam.

Acton, John, 118 John St., Brooklyn, N. Y.
American District Steam Co., Lockport, N. Y.
Austin Separator Co., Detroit, Mich.
Baldwin Engineering Co., 107 W. 17th St., New York.
Baum Separator & Machine Co., Manheim, Pa.
Bushnell, John S., Co., 126 Liberty St., New York.
De Rycke, Joseph, 41 Cortlandt St., New York.
Direct Separator Co., Syracuse, N. Y.
Griffing, A. A. Iron Co., 449 Communipaw Ave., Jersey City,
Harrison Safety Boiler Works, 17th & Clearfield Sts., Philda.
Hoppes Mfg. Co., Springfield, O.
Hussey, McCann & Co., 37 Dey St., New York.
Kaestner, Charles, & Co., 241 S. Jefferson St., Chicago, Ill.
Keystone Engine & Machine Works, 5th & Buttonwood Sts., Philadelphia, Pa.
Kieley & Mueller, 34 W. 13th St., New York.
Lunkenheimer Co., Cincinnati, O.
Mosher Water Tube Boiler Co., 1 Broadway, New York.
Providence Steam Trap Co., Providence, R. I.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Scranton Steam Pump Co., Scranton, Pa.
Sims Co., Erie, Pa.
Thompson, Richard, & Co., 126 Liberty St., New York. *See adv. page 102.*
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa.
Webster, Warren, & Co., Camden, N. J.

62 **FEEDERS, BOILER.** For feeding water to boilers that operate under low pressure of steam, and where water under pressure is not available.

Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
Gardner Governor Co., Quincy, Ill.
Kieley & Mueller, 34 W. 13th St., New York.
Nason Mfg. Co., 71 Fulton St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Standard Steam Specialty Co., 111 5th Ave., New York.

63 **Boiler Compound.** For feeding compound to boilers.

Eagle Oil & Supply Co., 104 Broad St., Boston, Mass.
Hancock Inspirator Co., 89 Liberty St., New York.
Lee Mfg. Co., Port Huron, Mich.
Lunkenheimer Co., Cincinnati, O.
Powell, Wm, Co., Cincinnati, O.
Sims Co., Erie, Pa.

FEEDERS, continued

64 **Boiler Oil.** For feeding oil to furnaces of boilers, the oil being used for fuel.

Clum, P. A., & Co., Rochester, N. Y.
Davis, G. M., Regulator Co., 100 N. Clinton St., Chicago, Ill.
Detroit Lubricator Co., Detroit, Mich.
Hancock Inspirator Co., 89 Liberty St., New York.
Lee Mfg. Co., Port Huron, Mich.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
McRae & Roberts Co., Detroit, Mich.
Michigan Lubricator Co., Detroit, Mich.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Sims Co., Erie, Pa.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Talmage Mfg. Co., Cleveland, O.
Watts Regulator Co., Lawrence, Mass.

65 **FILTERS, FEED WATER.** For purifying the feed water of steam boilers.

Baragwanath, Wm., & Son, 54 W. Division St., Chicago, Ill.
Bates Machine Co., Joliet, Ill.
Erie Machine Works, Erie, Pa.
Hammond Iron Works, Warren, Pa.
Harrison Safety Boiler Works, 17th & Clearfield Sts., Philada.
Hayden & Derby Mfg. Co., 89 Liberty St., New York.
Hoppes Mfg. Co., Springfield, O.
McGowan, John H., Co., Cincinnati, O.
Monitor Water Purifier Co., Lansing, Mich.
Pittsburg Filter & Water Heater Co., Pittsburg, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Webster, Warren, & Co., Camden, N. J.

66 **Oil.** For collecting the waste oil from engines, and removing all foreign matter.

Bailey, F. E., & Co., Reading, Pa.
Bonar, James, & Co., Pittsburg, Pa.
Burt Mfg. Co., Akron, O.
Collins Mfg. Co., Ltd., Conshohocken, Pa.
Engineering & Power Co., Jamestown, N. Y.
Gravity Purifier Co., Decatur, Ind.
Haines, Wm. S. Co., 136 S. 4th St., Philadelphia, Pa.
Nusbaum, F. A., Dayton, O. *See adv. page 117.*
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Purity Oil Filter Mfg. Co., Pittsburg, Pa.
Robertson, Jas. L., & Son, 204 Fulton St., New York.
Sexton & Co., 60 Broad St., Boston, Mass.
Sims Co., Erie, Pa.
Union Steam Specialty Co., Scranton, Pa.

67 **FLOATS, COPPER.** Hollow water-tight spheres of spun copper for indicating the height of a fluid, or for operating apparatus by the fluctuations of a fluid on which they rest.

Boekel, William, & Co., 519 Vine St., Philadelphia, Pa.
Boston Brass Co., 36 Oliver St., Boston, Mass.
Boston Steam Specialty Co., 170 Congress St., Boston, Mass.
Diamond Stamped Ware Co., Detroit, Mich.
Forest City Brass Works, Cleveland, O.

FLOATS, COPPER, continued

Hercules Float Works, Springfield, Mass.
Mott, J. L., Iron Works, 84 Beekman St., New York.
National Brass & Metal Co., Minneapolis, Minn.
Naugatuck Mfg. Co., Naugatuck, Conn.
Page, Wm. H. Boiler Co., Norwich, Conn.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Reliance Gauge Column Co., Cleveland, O.
Rome Sanitary Works, Rome, N. Y.
Springfield Brass Co., Springfield, Mass.
Trageser, John, Steam Copper Works, 447 W. 26th St., N. Y.

68 **GAGES.** For registering pressure of steam or liquid, or for indicating the height of liquids in vessels, as the height of water in boilers.

69 **Draft.** For measuring the induced pressure resulting from the draft of a chimney, or a draft apparatus.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Bonner, Wm. F., & Co., 53 State St., Boston, Mass.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Hohmann & Maurer Mfg. Co., Rochester, N. Y.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.

70 **Mercury.** For measuring pressure by means of a mercury column.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Brown, Edward, 915 Samson St., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Hohmann & Maurer Mfg. Co., Rochester, N. Y.
Pittsburg Gage & Supply Co., Pittsburg, Pa. *See adv. page 113.*
Quimby Engineering Co., 913 Ridge Avenue, Philadelphia, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Standard Gauge Mfg. Co., Syracuse, N. Y.

71 **Pressure Recording.** Having a dial with index hand, provided with pen or pencil, which graphically records the pressure.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Bristol Co., Waterbury, Conn.
Crosby Steam Gage & Valve Mfg. Co., 97 Oliver St., Boston.
Helios-Upton Co., Peabody, Mass.
Hohmann & Maurer Mfg. Co., Rochester, N. Y.
Pittsburg Gage & Supply Co., Pittsburg, Pa. *See adv. page 113.*
Quimby Engineering Co., 913 Ridge Ave., Philadelphia, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Schmidt, G. & L., 216 Centre St., New York.
Standard Gauge Mfg. Co., Syracuse, N. Y.

GAGES, PRESSURE RECORDING, continued

Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Trautvetter Bros., Paterson, N. J.

72 **Steam.** For indicating pressure of steam in pounds per square inch, and the corresponding degrees of heat.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Hohmann & Maurer Mfg. Co., Rochester, N. Y.
Jarecki Mfg. Co., Erie, Pa.
Lunkenheimer Co., Cincinnati, O.
Marsh, James P., & Co., 224 Washington St., Chicago, Ill.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Schmidt, G. & L., 216 Centre St., New York.
Standard Gauge Mfg. Co., Syracuse, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Utica Steam Gauge Co., Frankfort, N. Y.

73 **Vacuum.** For indicating absolute pressure below atmospheric pressure. Usually graduated in inches corresponding to the height of the mercury column supported by atmospheric pressure.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Cleveland Steam Gauge Co., Cleveland, O.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Hohmann & Maurer Mfg. Co., Rochester, N. Y.
Marsh, Jas. P., & Co., 224 Washington St., Chicago, Ill.
Phillips Co., 257 Atlantic Ave., Boston, Mass.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Quimby Engineering Co., 913 Ridge Ave., Philadelphia, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Schmidt, G. & L., 216 Centre St., New York.
Standard Gauge Mfg. Co., Syracuse, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Utica Steam Gauge Co., Frankfort, N. Y.

74 **Water.** For indicating the height of water while under pressure in the boiler.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Belknap Mfg. Co., Bridgeport, Conn.
Bonner, Wm. T., & Co., 53 State St., Boston, Mass.
Buckeye Iron & Brass Works, Dayton, O.

GAGES, WATER, continued

Cochrane, J. A., Cleveland, O.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Fairbanks Co., Broome & Elm Sts., New York.
Haydenville Co., Haydenville, Mass.
Jarecki Mfg. Co., Erie, Pa.
Lang, J., Electric Co., 176 E. Indiana St., Chicago, Ill.
Marsh, Jas. P., & Co., 224 Washington St., Chicago, Ill.
McNab & Harlin Mfg. Co., 56 John St., New York.
McRae & Roberts Co., Detroit, Mich.
Michigan Lubricator Co., Detroit, Mich.
Ohio Brass Co., Mansfield, O.
Penberthy Injector Co., Detroit, Mich.
Phillips Co., 257 Atlantic Ave., Boston, Mass.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Queen City Brass & Iron Works, Cincinnati, O.
Reliable Water Gauge Co., 1616 Pine St., St. Louis, Mo.
Reliance Gauge Column Co., Cleveland, O. *See adv. page 117.*
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Schmidt, G. & L., 216 Centre St., New York.
Standard Gauge Mfg. Co., Syracuse, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Trautvetter Bros., Paterson, N. J.
Utica Steam Gauge Co., Frankfort, N. Y.
Van Duzen, E. W. Co., Cincinnati, O.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Wright Mfg. Co., Detroit, Mich.

75 GASKETS. Rings for interposing between flanges or similar parts to prevent leakage.

American District Steam Co., Lockport, N. Y.
American Vulcanized Fibre Co., Wilmington, Del.
Boston Belting Co., 256 Devonshire St., Boston, Mass.
Brandt, Randolph, 38 Cortlandt St., New York.
Canfield, H. O., Bridgeport, Conn.
Chesterton, A. W., & Co., 64 India St., Boston, Mass.
Combination Rubber & Belting Co., Bloomfield, N. J.
Common Sense Metallic Packing Mfg. Co., 393 Pearl St., N. Y.
Crescent Belting & Packing Co., Trenton, N. J.
Delaware Hard Fibre Co., Wilmington, Del.
Diamond Rubber Co., Akron, O.
Eagle Oil & Supply Co., 104 Broad St., Boston, Mass.
France Packing Co., Inc., Tacony, Philadelphia, Pa. *See adv. page 107.*
Garlock Packing Co., Palmyra, N. Y.
Goodrich, B. F., Co., Akron, O.
Goodyear Rubber Co., 787 Broadway, New York.
Guillott Metal Gasket Co., 84 Market St., Chicago, Ill.
Gutta Percha & Rubber Mfg. Co., 126 Duane St., New York.
Hamilton Rubber Mfg. Co., Trenton, N. J.
Home Rubber Co., Trenton, N. J.
Humphryes Mfg. Co., Mansfield, O.
Jenkins Bros., 71 John St., New York.
Johns, H. W.-Manville Co., 100 William St., New York.
Knowlton, Geo. W., Rubber Co., 29 Broad St., Boston, Mass.

GASKETS, continued

La Favorite Rubber Mfg. Co., Hawthorne, N. J.
Lake Shore Rubber Co., Erie, Pa.
Libby Mfg. Co., 73 Water St., New York.
Magee, Alonzo H., 106-108 Beekman St., New York.
Manhattan Rubber Mfg. Co., 18 Vesey St., New York.
Mechanical Rubber Co., Cleveland, O.
Merwath Metallic Casket Co., 32 Broadway, New York.
Mineralized Rubber Co., Inc., 18 Cliff St., New York.
Morgan & Wright, 331 West Lake St., Chicago, Ill.
National India Rubber Co., Bristol, R. I.
New Jersey Asbestos Co., Camden, N. J.
New York Belting & Packing Co., 25 Park Place, New York.
New York Rubber Co., 84 Reade St., New York.
Pennsylvania Rubber Co., Jeannette, Pa.
Peerless Rubber Mfg. Co., 16 Warren St., New York. *See adv. page 110.*
Pilley Packing & Flue Brush Mfg. Co., St. Louis, Mo.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., 77 Bedford St., Boston, Mass.
Smith, James, & Co., Inc., 411 Race St., Philadelphia, Pa.
Stokes, Joseph, Rubber Co., Trenton, N. J.
Strong Machinery & Supply Co., 2½ Murray St., New York.
Taunton Rubber Mfg. Co., Taunton, Mass.
Trenton Rubber Mfg. Co., Trenton, N. J.
United States Mineral Wool Co., 143 Liberty St., New York.
United & Globe Rubber Mfg. Co., Trenton, N. J.
Vulcan Asbestos Co., 116 Maiden Lane, New York.
Watt's, John M., Sons, 123 S. 2d St., Philadelphia, Pa.
Whitehead Bros. Rubber Co., Trenton, N. J.

76 GLASSES, GAGE. The indicating glasses in gages.

Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Keating, Edward F., 446 Water St., New York.

77 GOVERNORS, PUMP. For controlling the working of steam or power pumps. Usually operated by the height of the water column.

Albany Steam Trap Co., Albany, N. Y.
Boston Steam Specialty Co., 170 Congress St., Boston, Mass.
Burrows Mfg. Co., Williamsport, Pa.
Creamer Steam Specialties Co., 123 Liberty St., New York.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
D'Este, Julian Co., 24 Canal St., Boston, Mass.
Elektron Mfg. Co., Springfield, Mass.
Fisher Governor Co., Marshalltown, Ia.
Ford, Thomas P. Co., 81 Centre St., New York.
Foster Engineering Co., Newark, N. J.
Gardner Governor Co., Quincy, Ill.
Kieley & Mueller, 34 W. 13th St., New York.
Kitts Mfg. Co., Oswego, N. Y.
Locke Regulator Co., Salem, Mass.
Lombard Governor Co., 36 Whittier St., Boston, Mass.
Mason Regulator Co., 158 Summer St., Boston, Mass.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.

GOVERNORS, PUMP, continued

Standard Steam Specialty Co., 111 5th Ave., New York.
Valley Iron Works, Williamsport, Pa.
Waters Governor Co., 34 Oliver St., New York.
Watts Regulator Co., Lawrence, Mass.

78 **Steam Engine.** For controlling the speed of steam engines.

Eclipse Governor Co., Vicksburg, Mich.
Gardner Governor Co., Quincy, Ill.
Jarecki Mfg. Co., Erie, Pa.
Judson Governor Co., Rochester, N. Y.
Lane & Bodley Co., Cincinnati, O.
Lombard Governor Co., 36 Whittier St., Boston, Mass.
Manufacturers Governor Co., Hartford, Conn.
Nordberg Mfg. Co., Milwaukee, Wis.
Pickering Governor Co., Portland, Conn.
Sinker-Davis Co., Indianapolis, Ind.
Stearns Mfg. Co., Erie, Pa.
Waters Governor Co., 34 Oliver St., Boston, Mass.

79 **Water Wheel.** For regulating the speed of water wheels.

American Water Motor Co., Columbus, O.
Lombard Governor Co., 36 Whittier St., Boston, Mass.
Replogle Governor Works, Chestnut St., Akron, O.
Sturgess Governor Engineering Co., Troy, N. Y.
Woodward Governor Co., Rockford, Ill.

80 **GRATE BARS.**

Ashcroft Mfg. Co., 85 Liberty St., New York.
Brightman Furnace Co., Cleveland, O.
Butman Boiler Furnace Co., Monadnock Blk., Chicago, Ill.
Casey & Hedges, Mfg. Co., Chattanooga, Tenn.
Co-operative Foundry, Detroit, Mich.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Foster, F. W., Mfg. Co., 6 Portland St., Boston, Mass.
Gill, J. H., Raleigh, N. C.
Gordon Hollow Blast Grate Co., Greenville, Mich.
Hetherington & Berner, Indianapolis, Ind.
Holyoke Steam Boiler Works, Holyoke, Mass.
Kelly Foundry & Machine Co., Goshen, Ind.
Kutztown Foundry & Machine Co., Kutztown, Pa.
Lahman, W. H., 59 E. Indiana St., Chicago, Ill.
Lane & Bodley Co., Cincinnati, O.
McClave, Brooks & Co., Scranton, Pa.
Mechanics' Iron Foundry Co., 38 Kemble St., Boston, Mass.
Mershon Patent Shaking Grate Works, 1203 Filbert St., Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Murray Iron Works Co., Burlington, Ia.
National Water Tube Boiler Co., New Brunswick, N. J.
Neemes Bros., Troy, N. Y.
New England Roller Grate Co., Springfield, Mass.
New York Grate Bar Co., Jersey City, N. J.
Pittsburg Valve, Foundry & Construction Co., Pittsburg, Pa.
Playford Stoker Co., Cleveland, O.
Reagan Grate Bar Co., 209 N. Front St., Philadelphia, Pa.

GRATE BARS, continued

Robson, Chas. W., W. Washington Ave. & 8th St., Philda.
Robertson, Jas. L., & Son, 204 Fulton St., New York.
Rose Patent Grate Co., Council Bluffs, Ia.
Rutzler, E., 178 Centre St., New York.
Salamander Grate Bar Co., 126 Liberty St., New York.
Scranton Steam Pump Co., Scranton, Pa.
Sharpless & Watts, 1522 Chestnut St., Philadelphia, Pa.
Stowell Mfg. & Foundry Co., South Milwaukee, Wis.
Thompson, Richard, & Co., 126 Liberty St., New York.
Titusville Iron Co., Titusville, Pa.
Toledo Foundry & Machine Co., Toledo, O.
Tupper, W. W., & Co., 39 Cortlandt St., New York.
Union Steam Specialty Co., Scranton, Pa.
Wickes Bros., Saginaw, Mich.
Willoughby, A. B., The Bourse, Philadelphia, Pa. *See adv. page 102.*
Worthington National Grate Co., Baltimore, Md.

81 **GRATES, DUMPING.**

Lahman, W. H., 59 E. Indiana St., Chicago, Ill.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Scranton Steam Pump Co., Scranton, Pa.
Thompson, Richard, & Co., 126 Liberty St., New York.
Treadwell, M. H., & Co., 95 Liberty St., New York.
Tupper, W. W., & Co., 39 Cortlandt St., New York.

82 **Oblong and Circular.** Made to fit oblong or circular fireboxes.

Gordon Hollow Blast Grate Co., Greenville, Mich.
Kelly Foundry & Machine Co., Goshen, Ind.
Scranton Steam Pump Co., Scranton, Pa.
Thompson, Richard, & Co., 126 Liberty St., New York. *See adv. page 102.*

83 **Rocking.** See 84, Shaking Grates.

84 **Shaking.** That can be oscillated to clean the fires.

Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Foster, F. W., Mfg. Co., 106 Portland St., Boston, Mass
Hancock Inspirator Co., 89 Liberty St., New York.
Kelly Foundry & Machine Co., Goshen, Ind.
McClave Brooks Co., Scranton, Pa.
Martin Grate Co., 281 Dearborn St., Chicago, Ill.
Mershon Patent Shaking Grate Works, 1203 Filbert St., Philadelphia, Pa.
Neemes Bros., Troy, N. Y.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Salamander Grate Bar Co., 126 Liberty St., New York.
Scranton Steam Pump Co., Scranton, Pa.
St. John, G. C., 143 Liberty St., New York.
Springfield Boiler & Mfg. Co., Springfield, Ill.
Thompson, Richard, & Co., 126 Liberty St., New York. *See adv. page 102.*
Titusville Iron Co., Titusville, Pa.
Treadwell, M. H., & Co., 95 Liberty St., New York.
Tupper, W. W., & Co., 39 Cortlandt St., New York.
Union Steam Specialty Co., Scranton, Pa.

85 **HEATERS, FEED WATER.** For transferring waste heat—generally from exhaust steam—to the feed water, to raise its temperature before entering the boiler.

Baragwanath, Wm., & Son, 54 W. Division St., Chicago, Ill.
Bates Machine Co., Joliet, Ill.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Bonar, Jas., & Co., Pittsburg, Pa.
Bridgeport Boiler Works, Bridgeport, Conn.
Brownell Co., Dayton, O.
Buffalo Feed Water Heater & Purifier Co., White Bldg., Buffalo, N. Y.
Bulkley, Henry W., 141 Broadway, New York.
Colles, E. G. T., & Co., 42 Clinton St., Chicago, Ill.
Cox, & Sons Co., Bridgeton, N. J.
Davis, I. B., & Son, Hartford, Conn.
Erie Machine Shops, Erie, Pa.
Erie Mfg. & Supply Co., Erie, Pa.
Fisher & Davis, 1024 N. Main St., St. Louis, Mo.
Fulton Iron Works, San Francisco, Cal.
Gem City Boiler Co., Dayton, O.
Goubert Mfg. Co., 85 Liberty St., New York.
Griffing, A. A., Iron Co., 449 Communipaw Ave., Jersey City.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
Harrison Safety Boiler Works, 17th & Clearfield Sts., Philda.
Hawley Down Draft Furnace Co., 59 Townsend St., Chicago.
Hooker Steam Pump Co., St. Louis, Mo.
Hoppes Mfg. Co., Springfield, O.
Hussey, McCann & Co., 47 Dey St., New York.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.
Kelley, Benjamin F., & Son, 91 Liberty St., New York. *See adv. page 116.*
Kensington Engine Works, Ltd., 245 N. Broad St., Philda.
Keystone Engine & Machine Works, 5th & Buttonwood Sts., Philadelphia, Pa.
Kroschall Bros. Co., 59 E. Erie St., Chicago, Ill.
Lane & Bodley, Cincinnati, O.
Lawler Water-Feed & Damper Regulator Co., 181 Mercer St., New York.
Learmonth, Robert, Buffalo, N. Y. *See adv. page 118.*
McGowan, John H., Co., Cincinnati, O.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Mott, J. L., Iron Works, 88 Beekman St., New York.
Murray Iron Works Co., Burlington, Ia.
Nason Mfg. Co., 71 Fulton St., New York.
National Pipe Bending Co., New Haven, Conn.
Nordberg Mfg. Co., Milwaukee, Wis.
Oakes, William L., Decatur, Ill.
Patterson, Frank L., & Co., 26 Cortlandt St., New York.
Phoenix Iron Works Co., Meadville, Pa.
Pittsburg Feed Water Heater Co., Carnegie Bldg., Pittsburg.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Scaife, W. B., & Sons Co., Pittsburg, Pa.
Scranton Steam Pump Co., Scranton, Pa.
Sims Co., Erie, Pa.
Springfield Boiler & Mfg. Co., Springfield, Ill.
Stewart Heater Co., Buffalo, N. Y. *See adv. page 109.*
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.

HEATERS, FEED WATER, continued

Taunton Locomotive Mfg. Co., Taunton, Mass.
Tudor Boiler Mfg. Co., Cincinnati, O.
Wangler, Joseph F., Boiler & Sheet Iron Works Co., St. Louis.
Webster, Warren, & Co., Camden, N. J.
Wetherill, Robert, & Co., Chester, Pa.
Wheeler Condenser & Engineering Co., 120 Liberty St., N. Y.
Whitlock Coil Pipe Co., Hartford, Conn. *See adv. page 114.*
Wickes Bros., Saginaw, Mich.
Worthington, Henry R., 114 Liberty St., New York.

86 **INDICATORS, SPEED.** See 54, Counters, Revolution.

87 **Steam Engine.** For drawing on paper a diagram, whose ordinates shall accurately represent in height, the steam pressure on the piston, at each and every part of the stroke, and for showing the arrangement of the valves for admission, cut-off, release, and compression; the power developed, etc.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Bushnell, John S., Co., 126 Liberty St., New York.
Crosby Steam Gage & Valve Co., Boston, Mass.
Lippincott, A. C., Scranton, Pa.
Phillips Co., 164 High St., Boston, Mass.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Thompson, Richard, & Co., 126 Liberty St., New York. *See adv. page 102.*
Trill, W. L., Corry, Pa.
Union Steam Specialty Co., Scranton, Pa.

88 **INJECTORS, BOILER FEEDING.** For lifting and heating water and forcing it into boilers.

American Injector Co., Detroit, Mich.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Cadman, A. W., Mfg. Co., Pittsburg, Pa.
Cochrane, J. A., Cleveland, O.
Desmond-Stephan Mfg. Co., Urbana, O.
Erie Mfg. & Supply Co., Erie, Pa.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Forest City Brass Works, Cleveland, O.
Griffiths, James A., 500 N. 12th St., Philadelphia, Pa.
Hancock Inspirator Co., 89 Liberty St., New York.
Hayden & Derby Mfg. Co., 89 Liberty St., New York.
Lee Mfg. Co., Port Huron, Mich.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
Nathan Mfg. Co., 94 Liberty St., New York.
Ohio Injector Co., Wadsworth, O.
Penberthy Injector Co., Detroit, Mich.
Powell, Wm., Co., Cincinnati, O.
Randle Machinery Co., Cincinnati, O.
Rue Mfg. Co., 215 Race St., Philadelphia, Pa.

INJECTORS, continued

Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Sherwood Mfg. Co., Buffalo, N. Y.
Sims Co., Erie, Pa.
Steam Appliance Co., 241 Greenfield Ave., Milwaukee, Wis.
Stephens, Roe, Mfg. Co., Detroit, Mich.
Tranter-Davison Mfg. Co., Pittsburg, Pa.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Watson, N. A., Erie, Pa.

89 **INSPIRATORS.** See 88, Injectors, Boiler Feeding.

90 **LUBRICATORS AND OILING DEVICES.** For feeding oil, grease, graphite, or other lubricating material to the moving bearings of machinery.

91 **Automatic.** For automatically feeding lubricants into machinery bearings.

Cochrane, J. A., Cleveland, O.
Greene, Tweed & Co., 17 Murray St., New York.
Haydenville Co., Haydenville, Mass.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
Manzel Bros., Buffalo, N. Y.
Nathan Mfg. Co., 92 Liberty St., New York.
Phenix Metallic Packing Co., 7 S. Jefferson St., Chicago, Ill.
Phillips Co., 164 High St., Boston, Mass.
Powell, Wm. Co., Cincinnati, O.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Sterling Lubricator Co., Rochester, N. Y.
Swift Lubricator Co., Elmira, N. Y.

92 **Central Tank System.** For lubricating by means of pipes from an elevated reservoir, so that the oil flows by gravity to the bearings, being then caught by drip pans and returned to the reservoir by a pump.

Bailey, F. E., & Co., Reading, Pa.
Lunkenheimer Co., Cincinnati, O.
Nathan Mfg. Co., 92 Liberty St., New York.
Phillips Co., 164 High St., Boston, Mass.
Sherwood Mfg. Co., 34 Washington St., Buffalo, N. Y.
Siegrist Lubricator Co., St. Louis, Mo.

93 **Force Feed, Mechanical.** For forcing or feeding lubricants to machinery bearings.

Boston Steam Specialty Co., 170 Congress St., Boston, Mass.
Farnan Brass Works, Cleveland, O.
Force Feed Lubricating Co., Milwaukee, Wis.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
Michigan Lubricator Co., Detroit, Mich.
Nathan Mfg. Co., 92 Liberty St., New York.
Phillips Co., 164 High St., Boston, Mass.
Powell, Wm., Co., Cincinnati, O.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.

OILING DEVICES, continued

94 **Grease Cups.** For feeding grease to bearings.

American Injector Co., Detroit, Mich.
Bowen Mfg. Co., Auburn, N. Y.
Delaney Oil & Lubricant Co., Milwaukee, Wis.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Forest City Brass Works, Cleveland, O.
France Packing Co., Inc., Taconey, Philadelphia, Pa.
Haydenville Co., Haydenville, Mass.
Holland, Wm., 56 S. Canal St., Chicago, Ill.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Michigan Lubricator Co., Detroit, Mich.
Nathan Mfg. Co., 92 Liberty St., New York.
Ohio Brass Co., Mansfield, O.
Penberthy Injector Co., Detroit, Mich.
Phillips Co., 257 Atlantic Ave., Boston, Mass.
Powell, Wm., Co., Cincinnati, O.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Sherwood Mfg. Co., Buffalo, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.

95 AUTOMATIC. Fitted with a spring and plunger.

American Injector Co., Detroit, Mich.
Forest City Brass Works, Cleveland, O.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Nathan Mfg. Co., 92 Liberty St., New York.
Phillips Co., 257 Atlantic Ave., Boston, Mass.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.

96 **Oil Cups.** For feeding oil to bearings.

American Injector Co., Detroit, Mich.
Bangs Oil Cup Co., 118 Fowler St., Milwaukee, Wis.
Barnes & Erb Co., 3846 Lancaster Ave., Philadelphia, Pa.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.
Bowen Mfg. Co., Auburn, N. Y.
Buckeye Iron & Brass Works, Dayton, O.
Cochrane, J. A., Cleveland, O.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Detroit Lubricator Co., Detroit, Mich.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Forest City Brass Works, Cleveland, O.
Gem Mfg. Co., Pittsburg, Pa.
Haydenville Co., Haydenville, Mass.
Kelly & Jones Co., Greensburg, Pa.
Keystone Brass Co., Erie, Pa.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Manzel Bros., Buffalo, N. Y.
Michigan Lubricator Co., Detroit, Mich.

OILING DEVICES, continued

Nathan Mfg. Co., 92 Liberty St., New York.
National Brass & Metal Co., Minneapolis, Minn.
Ohio Brass Co., Mansfield, O.
Penberthy Injector Co., Detroit, Mich.
Phillips Co., 257 Atlantic Ave., Boston, Mass.
Powell, Wm., Co., Cincinnati, O.
Reed Mfg. Co., Erie, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Seibert Cylinder Oil Cup Co., 53 Oliver St., Boston, Mass.
Sherwood Mfg. Co., Buffalo, N. Y.
Springfield Brass Co., Springfield, O.
Stahl-Salter Lubricating Co., Minneapolis, Minn.
Star Brass Mfg. Co., Boston, Mass.
Swain Lubricator Co., 250 Lake St., Chicago, Ill.
Thomas Brass & Iron Co., Waukegan, Ill.
Wadhams Oil & Grease Co., Milwaukee, Wis.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Weimer Machine Works Co., Lebanon, Pa.
Wilkinson, W. H., & Co., West Medway, Mass.

97 SIGHT FEED. Provided with a regulating device so that the oil feed may be observed.

Buckeye Iron & Brass Works, Dayton, O.
Cochrane, J. A., Cleveland, O.
Couse, Chas., & Co., 39 Dey St., New York.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Detroit Lubricator Co., Detroit, Mich.
Jerecki Mfg. Co., Ltd., Erie, Pa.
Kelly & Jones Co., Greensburg, Pa.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
McRae & Roberts, Detroit, Mich.
Michigan Lubricator Co., Detroit, Mich.
Nathan Mfg. Co., 92 Liberty St., New York.
Phillips Co., 257 Atlantic Ave., Boston, Mass.
Pittsburg Steam Jacket Lubricator Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Seibert Cylinder Oil Cup Co., 53 Oliver St., Boston, Mass.
Sherwood Mfg. Co., Buffalo, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Thomas Brass & Iron Co., Waukegan, Ill.
Wilkinson, W. H., & Co., West Medway, Mass.

98 **PACKING.** For preventing leakage at the joints of various apparatus containing air, steam or other gases or fluids under pressure.

99 **Gum, Fibrous, etc.**

Advance Packing & Supply Co., 55 S. Canal St., Chicago, Ill.
Alden Rubber Co., Akron, O.
Allen, W. D., Mfg. Co., 151 Lake St., Chicago, Ill.
American Steam Packing Co., 60 Federal St., Boston, Mass.
American Vulcanized Fibre Co, Wilmington, Del.
Asbestos Mfg. Co., 426 Market St., Philadelphia, Pa.
Boston Belting Co., 256 Devonshire St., Boston, Mass.

PACKING, GUM, ETC., continued

Brandt, Randolph, 38 Cortlandt St., New York.
Brooklyn Steam Packing & Supply Co., 206 Centre St., N. Y.
Cancos Mfg. Co., 146 N. 2d St., Philadelphia, Pa.
Canfield Mfg. Co., 1112 to 1122 Noble St., Philadelphia, Pa.
Chaplin-Fulton Mfg. Co., Pittsburg, Pa.
Chesterton, A. W., & Co., 64 India St., Boston, Mass.
Chicago Fireproof Covering Co., 18 N. Canal St., Chicago, Ill.
Clinton Mfg. Co., 83 Grand Ave., Brooklyn, N. Y.
Combination Rubber & Belting Co., Bloomfield, N. J.
Crandall Packing Co., Palmyra, N. Y.
Detroit Leather Specialty Co., Beecher & Michigan Aves., Detroit, Mich.
Delaware Hard Fibre Co., Wilmington, Del.
Diamond Rubber Co., Akron, O.
Eagle Oil & Supply Co., 104 Broad St., Boston, Mass.
Empire Rubber Mfg. Co., Trenton, N. J.
France Packing Co., Inc., Tacony, Philadelphia, Pa. *See adv. page 107.*
Garlock Packing Co., Palmyra, N. Y.
Gilmore, Robert M., Mfg. Co., 105 John St., New York.
Glanding, Jas., Co., 1907 N. 6th St., Philadelphia, Pa.
Globe Supply Co., Cincinnati, O.
Goodrich, B. F., Co., Akron, O.
Goodsell Packing Co., 33 S. Canal St., Chicago, Ill.
Goodyear Rubber Co., 787 Broadway, New York.
Gould Packing Co., East Cambridge, Mass.
Greene, Tweed & Co., 17 Murray St., New York.
Gutta Percha & Rubber Mfg. Co., 126 Duane St., New York.
Hamilton Rubber Mfg. Co., Trenton, N. J.
Home Rubber Co., Trenton, N. J.
Ireson, C. L., 148 High St., Boston, Mass.
Jacobs, Chas. M., Cordage Co., Cincinnati, O.
Jenkins Bros., 71 John St., New York.
Johns, H. W.-Manville Co., 100 William St., New York.
Johnson, Henry, & Co., Gates Ave. Blvd., Jersey City, N. J.
Knowlton, Geo. W., Rubber Co., 29 Broad St., Boston, Mass.
La Favorite Rubber Co., Hawthorne, N. J.
Lake Shore Rubber Co., Erie, Pa.
Lawrence Cordage Works, 46 South St., New York.
Leschen, A., & Sons Rope Co., St. Louis, Mo.
Libby Mfg. Co., 147-149 Varick St., New York.
Lubron Mfg. Co., 38 India St., Boston, Mass.
Lunkenheimer Co., Cincinnati, O.
McConnell Asbestos Co., Ltd., 265 Water St., Pittsburg, Pa.
Manhattan Rubber Mfg. Co., 18 Vesey St., New York.
Mechanical Rubber Co., Cleveland, O.
Mercer Rubber Co., Trenton, N. J.
Merwath Metallic Gasket Co., 32 Broadway, New York.
Metropolis Rubber Co., 116 Bleecker St., New York.
Mineralized Rubber Co., 18 Cliff St., New York.
Montgomery Bros., 48 N. Front St., Philadelphia, Pa.
Morgan & Wright, 331 W. Lake St., Chicago, Ill.
National India Rubber Co., Bristol, R. I.
New Jersey Asbestos Co., Camden, N. J.
New York Belting & Packing Co., 25 Park Place, New York.
New York Rubber Co., 84 Reade St., New York.
Peerless Rubber Mfg. Co., 16 Warren St., New York. *See adv. page 110.*

PACKING, GUM, ETC., continued

Pennsylvania Rubber Co., Jeannette, Pa.
Pilley Packing & Flue Brush Mfg. Co., St. Louis, Mo.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., 77 Bedford St., Boston, Mass.
Restein, Clement, & Co., 139 N. 2d St., Philadelphia, Pa.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Smith, James, & Co., Inc., 411 Race St., Philadelphia, Pa.
Stokes, Joseph, Rubber Co., Trenton, N. J.
Strong Machinery & Supply Co., 2½ Murray St., New York.
Trenton Rubber Mfg. Co., Trenton, N. J.
United & Globe Rubber Mfg. Co., Trenton, N. J.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Vulcan Asbestos Co., 116 Maiden Lane, New York.
Watt's, John M., Sons, 123 2d St., Philadelphia, Pa.
Whitehead Bros. Rubber Co., Trenton, N. J.

100 **Metallic.**

American Steam Packing Co., 60 Federal St., Boston, Mass.
Chaplin-Fulton Mfg. Co., Pittsburg, Pa.
Common Sense Metallic Packing Mfg. Co., 393 Pearl St., N. Y.
Cook, C. Lee, Louisville, Ky.
Crescent Mfg. Co., 96 Crescent Pl., Yonkers, N. Y.
France Packing Co., Inc., Tacony, Philadelphia, Pa. *See adv. page 107.*
Goodsell Packing Co., 32 S. Canal St., Chicago, Ill.
Harper & Slack Co., Chester, Pa.
Holmes Metallic Packing Co., Wilkesbarre, Pa.
Hoyt Metal Co., St. Louis, Mo.
Jerome & Elliott, 37 S. Canal St., Chicago, Ill.
Katzenstein, L., & Co., 357 West St., New York.
Libby Mfg. Co., 147-149 Varick St., New York.
Pioneer Brass Works, Indianapolis, Ind.
Regal Packing Co., 1402 Monadnock Blk., Chicago, Ill.
Swain Lubricator Co., 250 Lake St., Chicago, Ill.
United States Metallic Packing Co., 427 N. 13th St., Philda.
Watt's, John M., Sons, 123 2d St., Philadelphia, Pa.

101 **PIPE.**

102 **Bent.** Pipe bent to any desired radius of curvature.

Best Mfg. Co., Pittsburg, Pa.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Co., 26 Cortlandt St., New York.
Simmons Pipe Bending Works, Newark, N. J.
Whitlock Coil Pipe Co., Hartford, Conn. *See adv. page 114.*

103 **Cast Iron.**

Builders Iron Foundry, Providence, R. I.
Byers, John F., Machine Co., Ravenna, O.
Clow, J. B., & Sons, Cor. Harrison & Franklin Sts., Chicago.
Dimmick Pipe Co., Birmingham, Ala.
Donaldson Iron Co., Emaus, Pa.
Drummond, M. J., & Co., 192 Broadway, New York.
Fox, John, & Co., 253 Broadway, New York.
Massilion Iron & Steel Co., Massillon, O.
Nelson, Charles, 439 E. 10th St., New York.

PIPE, CAST IRON, continued

Reading Foundry Co., Reading, Pa.
United States Cast Iron Pipe & Foundry Co., 217 La Salle St., Chicago, Ill.
Utica Pipe Foundry Co., Utica, N. Y.
Warren Foundry & Machine Co., 160 Broadway, New York.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

104 **Riveted Steel.** Steel pipe, riveted together instead of being welded.

Abendroth & Root Mfg. Co., 99 John St., New York.
Carroll-Porter Boiler & Tank Co., Reading, Pa.
East Jersey Pipe Co., 71 Broadway, New York.
Gillespie, T. A., Co., Pittsburg, Pa.
Keeler, E., Co., Williamsport, Pa.
McNeil, James, & Bro., Co., 29th & Railroad Sts., Pittsburg, Pa.
Means & Fulton Iron Works, Birmingham, Ala.
Pelton Water Wheel Co., 125 Main St., San Francisco, Cal.
Pollock, Wm. B., & Co., Youngstown, O.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Springfield Boiler & Mfg. Co., Springfield, Ill.
Warren City Boiler Works, Warren, O.

105 **Spiral Riveted.** Pipe riveted spirally instead of straight.

Abendroth & Root Mfg. Co., 99 John St., New York.
American Spiral Pipe Works, 1173 S. Paulina St., Chicago, Ill.

106 **Wooden.**

American District Steam Co., Lockport, N. Y.
Excelsior Wooden Pipe Co., San Francisco, Cal.
National Wooden Pipe Co., Los Angeles, Cal.
Wyckoff, A., & Son, Elmira, N. Y.

107 **Wrought Iron.**

Alabama Tube & Iron Co., Birmingham, Ala.
Byers, A. M., & Son, Pittsburg, Pa.
Cohoes Rolling Mill Co., Cohoes, N. Y.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
National Tube Co., Pittsburg, Pa.
Shelby Tube Co., Cleveland, O.
Spang, Chalfant & Co., Pittsburg, Pa.
Standard Welding Co., Cleveland, O.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Youngstown Iron Sheet & Tube Co., Youngstown, O.

108 **PIPE BENDING MACHINES.** See Finding List.

109 **PIPE CUTTING AND THREADING MACHINES.** See Finding List.

110 **PIPE FITTINGS.** Connections for pipes, as couplings, crosses, etc.

111 **Brass.**

Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Belknap Mfg. Co., Bridgeport, Conn.
Best Mfg. Co., Pittsburg, Pa.
Boston Brass Co., 36 Oliver St., Boston, Mass.

PIPE FITTINGS, BRASS, continued

Boston Steam Specialty Co., 170 Congress St., Boston, Mass. *See adv. page 116.*
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Detroit Lubricator Co., Detroit, Mich.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Farnam Brass Works, Cleveland, O.
Fewlass, Leen Brass & Iron Co., Cincinnati, O.
Forest City Brass Works, Cleveland, O.
Grundy Brass Works, 90 Sudbury St., Boston, Mass.
Hamlin & Emery Brass Co., 26 Island St., Boston, Mass.
Haydenville Co., Haydenville, Mass.
Hoffman & Billings Mfg. Co., Milwaukee, Wis.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Kelly & Jones Co., Greensburg, Pa.
Kinsey & Mahler Co., Peoria, Ill.
Lunkenheimer Co., Cincinnati, O.
McCambridge & Co., Ltd., 523 Cherry St., Philadelphia, Pa.
McDonald, A. Y., & Morrison Mfg. Co., Dubuque, Ia.
McNab & Harlin Mfg. Co., 56 John St., New York.
Milwaukee Brass Mfg. Co., Milwaukee, Wis.
Mott, J. L., Iron Works, 84 Beekman St., New York.
Mueller, H., Mfg. Co., Decatur, Ill.
Oil Well Supply Co., Pittsburg, Pa.
Pioneer Brass Works, Indianapolis, Ind.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Powell, Wm., Co., Cincinnati, O.
Queen City Brass & Iron Works, Cincinnati, O.
Rundle-Spence Mfg. Co., Milwaukee, Wis.
Thomas Brass & Iron Co., Waukegan, Ill.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

112 **Cast Iron.**

American District Steam Co., Lockport, N. Y.
Arthur Co., 188 Front St., New York.
Best Mfg. Co., Pittsburg, Pa.
Blake & Andros, 28 Portland St., Boston, Mass.
Crane & Co., 10 N. Jefferson St., Chicago, Ill.
Dart, E. M., Mfg. Co., Providence, R. I.
Drummond, M. J., & Co., 192 Broadway, New York.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Flagg, Stanley G., & Co., 424 N. 19th St., Philadelphia, Pa.
Fostoria Novelty Co., Fostoria, O.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Illinois Malleable Iron Co., 32 W. Monroe St., Chicago, Ill.
Iron Sanitary Mfg. Co., 52 Dearborn St., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
Kelly & Jones Co., Greensburg, Pa.
Kuhns Bros., Dayton, O.
McLeod Co., 95 Liberty St., New York.
McNab & Harlin Mfg. Co., 56 John St., New York.
Michigan Heater Co., Big Rapids, Mich.
New Bedford Boiler & Machine Co., New Bedford, Mass.
Oil Well Supply Co., Pittsburg, Pa.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa
Quaker Mfg. Co., Chicago, Heights, Ill.

PIPE FITTINGS, CAST IRON, continued

Rundle-Spence Mfg. Co., Milwaukee, Wis.
Thomson & Boyle Co., Los Angeles, Cal.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

113 **Malleable Iron.**

Devlin, Thos., Mfg. Co., 3d St., cor. Lehigh Ave., Philadelphia.
Flagg, Stanley G., & Co., 424 N. 19th St., Philadelphia, Pa.
Fostoria Novelty Co., Fostoria, O.
Illinois Malleable Iron Co., 32 W. Monroe St., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
Jefferson Mfg. Co., Lexington, Mass.
Johnson, Isaac G., & Co., Spuyten Duyvil, N. Y.
Light Joint Co., 306-10 E. 47th St., New York.
Malleable Iron Fittings Co., Branford, Conn.
Oil Well Supply Co., Pittsburg, Pa.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

114 **PIPE RAILING FITTINGS.** Especially designed for building railings of pipe.

Belfield, H., & Co., 435 N. Front St., Philadelphia, Pa.
Boston Brass Co., 36 Oliver St., Boston, Mass.
Buckeye Iron & Brass Works, Dayton, O.
Devlin, Thos., Mfg. Co., 3d St., cor. Dehigh Ave., Philadelphia.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Flagg, Stanley G., & Co., 424 N. 19th St., Philadelphia, Pa.
Illinois Malleable Iron Co., 32 W. Monroe St., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
Kelly & Jones Co., Greensburg, Pa.
Sherwood Mfg. Co., Buffalo, N. Y.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

115 **PIPE TAPPING MACHINES.** See Finding List.

116 **PLANIMETERS.** For measuring area of indicator cards.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Bushnell, John S., Co., 126 Liberty St., New York.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Keuffel & Esser Co., 127 Fulton St., New York.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Thompson, Richard, & Co., 126 Liberty St., New York.
Union Steam Specialty Co., Scranton, Pa.

117 **PURIFIERS, FEED WATER.** For purifying feed water of steam boilers.

Buffalo Feed Water Heater & Purifier Co., White Bldg., Buffalo, N. Y.
Colles, E. G. T., & Co., 42 Clinton St., Chicago, Ill.
Curtis-Hall Mfg. Co., Hartford, Conn.
Harrison Safety Boiler Works, 17th & Clearfield Sts., Philda.
Hoppes Mfg. Co., Springfield, O.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.

PURIFIERS, FEED WATER, continued

Learmonth, Robert, Buffalo, N. Y. *See adv. page 118.*
McGowan, John H., Co., Cincinnati, O.
Patterson, Frank L., & Co., 26 Cortlandt St., New York.
Scaife, Wm. B., & Sons Co., Pittsburg, Pa.
Scranton Steam Pump Co., Scranton, Pa.
Wheeler Condenser & Engineering Co., 120 Liberty St., N. Y.
Wickes Bros., Saginaw, Mich.

118 **REDUCING WHEELS.** For reducing the motion of an engine head to convenient proportions for an indicator motion.

Ashcroft Mfg. Co., 85 Liberty St., New York.
Bushnell, John S., Co., 126 Liberty St., New York.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Deane, H. C., Fitchburg, Mass.
Lippincott, A. C., Scranton, Pa.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Trill, W. L., Corry, Pa.
Union Steam Specialty Co., Scranton, Pa.
Webster & Perks Tool Co., Springfield, O.

119 **REGULATORS.** For regulating high and low pressure steam boilers, engines, elevator pumps, etc.

120 **Damper.** For regulating the damper and consequently the draft of boiler furnaces.

Burrows Mfg. Co., York, Pa.
Collins Mfg. Co., Ltd., Conshohocken, Pa.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
D'Este, Julian, Co., 24 Canal St., Boston, Mass.
Ford, Thos. P., Co., 81 Centre St., New York.
Kelly & Jones Co., Greensburg, Pa.
Kieley & Mueller, 34 W. 13th St., New York.
Kitts Mfg. Co., Oswego, N. Y.
Lawler Water-Feed & Damper Regulator Co., 181 Mercer St., New York.
Locke Regulator Co., Salem, Mass.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Mason Regulator Co., 158 Summer St., Boston, Mass.
Nason Mfg. Co., 71 Fulton St., New York.
Patterson Regulator Co., Baltimore, Md.
Powers Regulator Co., 40 Dearborn St., Chicago, Ill.
Robertson, Jas. L., & Sons, 204 Fulton St., New York.
Rutzler, E., 178 Centre St., New York.
Scranton Steam Pump Co., Scranton, Pa.
Spencer Regulator Co., Salem, Mass.
Thompson, Richard, & Co., 126 Liberty St., New York.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Watts Regulator Co., Lawrence, Mass.

121 **Feed Water.** For holding the water at any desired point in the boiler.

Berry Engineering Co., Chester, Pa.
Boston Steam Specialty Co., 170 Summer St., Boston, Mass. *See adv. page 116.*
Burrows Mfg. Co., Williamsport, Pa.

REGULATORS, FEED WATER, continued

Chaplin-Fulton Mfg. Co., Pittsburg, Pa.
Clark Bros., Co., Vicksburg, Mich.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Ford, Thos. P., Co., 81 Centre St., New York.
Foster, F. W., Mfg. Co., 6 Portland St., Boston, Mass.
Kieley & Mueller, 34 W. 13th St., New York.
Lawler Water-Feed & Damper Regulator Co., 181 Mercer St., New York.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Standard Ice Machine & Mfg. Co., Hamilton, O.

122 **Pressure.** For keeping a desired pressure in heating systems by delivering live steam to exhaust pipes when exhaust steam is insufficient to give the required temperature.

Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
D'Este, Julian, Co., 24 Canal St., Boston, Mass.
Erwin & Co., 35 N. Canal St., Chicago, Ill.
Fairbanks Co., Broome & Elm Sts., New York.
Fisher Governor Co., Marshalltown, Ia.
Ford, Thos. P., Co., 81 Centre St., New York.
Foster Engineering Co., Newark, N. J.
Gardner Governor Co., Quincy, Ill.
Haines, Wm. S., Co., 136 S. 4th St., Philadelphia, Pa.
Johnson Temperature Regulating Co., 240 4th Ave., New York.
Kieley & Mueller, 34 W. 13th St., New York.
Kitts Mfg. Co., Oswego, N. Y.
Klipfel & Thomas Co., 74 W. Lake St., Chicago, Ill.
Locke Regulator Co., Salem, Mass.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Mason Regulator Co., 158 Summer St., Boston, Mass.
Monash-Younker Co., 203 S. Canal St., Chicago, Ill.
Quimby Engineering Co., 913 Ridge Ave., Philadelphia, Pa.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Union Steam Specialty Co., Scranton, Pa.
Waters Governor Co., 34 Oliver St., Boston, Mass.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa.
See adv. page 114.
Watts Regulator Co., Lawrence, Mass.

123 **Temperature.** For controlling the temperature of steam boilers and hot water heaters.

Boston Steam Specialty Co., 170 Congress St., Boston, Mass.
Davis & Roesch Temperature Controlling Co., 136 Liberty St., New York.
D'Este, Julian, Co., 24 Canal St., Boston, Mass.
Electric Heat Regulator Co., Minneapolis, Minn.
Howard Thermostat Co., Oswego, N. Y.
Kieley & Mueller, 34 W. 13th St., New York.
Lawler Water Feed & Damper Regulator Co., 181 Mercer St., New York.
Powers Regulator Co., 40 Dearborn St., Chicago, Ill.

124 **REHEATERS.** For improving the quality of the steam as it passes between the cylinders of multiple expansion engines.

Atlantic Works, 70 Border St., E. Boston, Mass.
Hussey, McCann, & Co., 47 Dey St., New York.
Wheeler Condenser & Engineering Co., 120 Liberty St., N. Y.

125 **RESEATING MACHINES, VALVE.** For refacing pipe valve seats and discs.

Barnum, W. P., Fredonia, N. Y.
Draper Mfg. Co., Port Huron, Mich.
Hall, C. F., & Son, Syracuse, N. Y.
Leavitt Machine Co., Orange, Mass.
Quincy Valve & Mfg. Co., Quincy, Ill.

126 **SEAT FACING MACHINES, VALVE.** For facing the valve-seats of engine cylinders.

Cogswell, W. B., Syracuse, N. Y.

127 **SCRAPERS, FLUE OR TUBE.** See 49, Cleaners, Flue or Tube.

128 **SEPARATORS, STEAM.** For removing entrained water, oil or grease from steam apparatus. See also 61, Extractors, Grease.

Albany Steam Trap Co., Albany, N. Y.
Austin Separator Co., Detroit, Mich.
Baum Separator & Machine Co., Manheim, Pa.
Best Mfg. Co., Pittsburg, Pa.
Coggswell, W. B., Syracuse, N. Y.
Colles, E. G. T., & Co., 42 Clinton St., Chicago, Ill.
De Rycke, Joseph, 41 Cortlandt St., New York.
D'Este, Julian, Co., 24 Canal St., Boston, Mass.
Direct Separator Co., Syracuse, N. Y.
Gardner Governor Co., Quincy, Ill.
Goubert Mfg. Co., 85 Liberty St., New York.
Griffing, A. A., Iron Co., Jersey City, N. J.
Harrison Safety Boiler Works, 17th & Clearfield Sts., Philda.
Hawley Down Draft Furnace Co., 59 Townsend St., Chicago.
Hoppes Mfg. Co., Springfield, O.
Ide, A. L., & Sons, Springfield, Ill.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.
Kensington Engine Works, 245 N. Broad St., Philadelphia, Pa.
Keystone Engine & Machine Works, 5th & Buttonwood Sts., Philadelphia, Pa.
Kieley & Mueller, 34 W. 13th St., New York.
Locke Regulator Co., Salem, Mass.
Monash-Younker Co., 203 S. Canal St., Chicago, Ill.
Mosher Water Tube Boiler Co., 1 Broadway, New York.
Patterson, Frank L., & Co., 26 Cortlandt St., New York.
Providence Steam Trap Co., Providence, R. I.
Robertson, James L., Sons, 204 Fulton Ave., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Steam Appliance Co., 241 Greenfield Ave., Milwaukee, Wis.
Union Steam Specialty Co., Scranton, Pa.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa.
Webster, Warren, & Co., Camden, N. J.
Wheeler Condenser & Eng'r'g Co., 120 Liberty St., New York.
Whitlock Coil Pipe Co., Hartford, Conn. *See adv. page 114.*

129 **STOKERS, MECHANICAL.** For mechanically feeding fuel to furnaces.

Acme Stoker Co., 95 Liberty St., New York.
Babcock & Wilcox Co., 85 Liberty St., New York. *See adv. page 108.*
Brightman Furnace Co., Cleveland, O.
Casey & Hedges Mfg. Co., Chattanooga, Tenn.
Day-Kincaid Stoker Co., Cincinnati, O.
Duluth Stoker Co., Duluth, Minn.
Kensington Engine Works, 245 N. Broad St., Philadelphia, Pa.
McClave-Brooks Co., Scranton, Pa.
Playford Stoker Co., Cleveland, O.
Pulverized Coal Stoker Co., 31 Burling Slip, New York.
Rosedale Foundry & Machine Co., Allegheny, Pa.
Ross & Co., 95 Liberty St., New York.
Under-Feed Stoker Co., Marquette Bldg., Chicago, Ill.
Westinghouse, Church, Kerr & Co., 8 Bridge St., New York.
Wilkinson Mfg. Co., Bridgeport, Pa.

130 **STOPS, ENGINE.** Devices for automatically stopping stationary engines.

Consolidated Engine Stop Co., 100 Broadway, New York. *See adv. page 104.*
Ford, Thos. P., Co., 81 Centre St., New York.
Lane & Bodley Co., Cincinnati, O.
Locke Regulator Co., Salem, Mass.
Monarch Mfg. Co., Waterbury, Conn.

131 **STRADDLE FITTINGS.** See 110, Pipe Fittings.

132 **SUPERHEATERS.** For superheating live steam.

Babcock & Wilcox Co., 85 Liberty St., New York. *See adv. page 108.*
Edgemoor Iron Co., Edgemoor, Del.
Hussey, McCann & Co., 37 Dey St., New York.
Power Specialty Co., Buffalo, N. Y.

133 **TANKS, STEAM BLOW-OFF.** Made to withstand ordinary boiler pressure and used to receive the discharge of steam boilers when blown off.

Atlantic Works, 70 Border St., E. Boston, Mass.
Collins Iron Works, Long Island City, N. Y.
Crowley, John, Jackson, Mich.
Cunningham, Christopher, Greenpoint Ave., Brooklyn, N. Y.
Delaney, P., & Co., Newburgh, N. Y.
Drake, William, Springfield, Ill.
Franklin Machine & Steam Boiler Works, 19 Franklin St., Brooklyn, N. Y.
Frick Co., Waynesboro, Pa.
Frost Mfg. Co., Galesburg, Ill.
Funk, M., Boiler Works Co., La Crosse, Wis.
Gem City Boiler Co., Dayton, O.
Griffing, A. A. Iron Co., 449 Communipaw Ave., Jersey City, N. J.
Hammond Iron Works, Warren, Pa.
Holyoke Steam Boiler Works, Holyoke, Mass.
Kellogg Bros., Jacksonville, Ill.
Kensington Engine Works, 245 N. Broad St., Philadelphia, Pa.

TANKS, STEAM BLOW-OFF, continued

Kewanee Boiler Co., Kewanee, Ill.
McAleenan Boiler Co., Peoria, Ill.
Michelmann Boiler Co., Quincy, Ill.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Murray Iron Works Co., Burlington, Ia.
Nichols, D. M., Iron Works, 2 Gouverneur Slip, New York.
Novelty Steam Boiler Works, Greenpoint Ave. & Newtown Creek, Brooklyn, N. Y.
Oakes, William L., Decatur, Ill.
Oil City Boiler Works, Oil City, Pa.
Pennsylvania Boiler Works, Erie, Pa.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Roberts Iron Works Co., Cambridgeport, Mass.
Springfield Boiler & Mfg. Co., Springfield, Ill.
Star Boiler Works, Clinton, Ia.
Struthers-Wells Co., Warren, Pa.
Union Boiler & Mfg. Co., Lebanon, Pa.
Vulcan Iron Works, San Francisco, Cal.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.

134 **THERMOMETERS, RECORDING.** For recording temperature.

Bristol Co., Waterbury, Conn.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Watertown Thermometer Co., Watertown, N. Y.

135 **TOWERS, WATER COOLING.** For recooling ammonia and steam condenser water.

Alberger Condenser Co., 95 Liberty St., New York.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
International Steam Engineering Co., Atlanta, Ga.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Ruemmeli-Dawley Mfg. Co., 3900 Chouteau Ave., St. Louis, Mo.
Wheeler Condenser & Engineering Co., 120 Liberty St., N. Y.
Worthington, Henry R., 114 Liberty St., New York.

136 **TRAPS, STEAM.** For removing condensation from pipe systems.

Albany Steam Trap Co., Albany, N. Y.
American District Steam Co., Lockport, N. Y.
Arthur Co., 188 Front St., New York.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Bayley, William, & Sons Co., Milwaukee, Wis.
Bickel, Fred L., 1348 Palmer St., Philadelphia, Pa.
Bonar, Jas., & Co., Pittsburg, Pa.
Boston Steam Specialty Co., 170 Congress St., Boston, Mass. *See adv. page 116.*
Brainerd Steam Trap Co., 12 Howes St., Boston, Mass.
Buckeye Iron & Brass Works, Dayton, O.
Creamer Steam Specialties Co., 123 Liberty St., New York.
Dame & Townsend Co., 76 John St., New York.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
D'Este, Julian, Co., 24 Canal St., Boston, Mass.
Direct Separator Co., Syracuse, N. Y.

TRAPS, STEAM, continued

Eureka Iron Co., 14 N. Canal St., Chicago, Ill.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Flinn, Richard J., West Roxbury, Mass.
Ford, Thos. P., Co., 81 Centre St., New York.
Foskett & Bishop Co., New Haven, Conn.
Griffing, A. A., Iron Co., 449 Communipaw Ave., Jersey City.
Haines, Wm. S., Co., 136 S. 4th St., Philadelphia, Pa.
Helios-Upton Co., Peabody, Mass.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Hussey, McCann & Co., 37 Dey St., New York.
Illinois Malleable Iron Co., 32 W. Monroe St., Chicago, Ill.
Jenkins Bros., 71 John St., New York.
Kelly & Jones Co., Greensburg, Pa.
Kieley & Mueller, 34 W. 13th St., New York.
Kitts Mfg. Co., Oswego, N. Y.
Klipfel & Thomas Co., 74 W. Lake St., Chicago, Ill.
Lawler Water-Feed & Damper Regulator Co., 181 Mercer St., New York.
Locke Regulator Co., Salem, Mass.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Marsh, Jas. P., & Co., 224 Washington St., Chicago, Ill.
Monash-Younker Co., 203 S. Canal St., Chicago, Ill.
McCrea, James, & Co., 67 W. Washington St., Chicago, Ill.
McNab & Harlin Mfg. Co., 56 John St., New York.
Nason Mfg. Co., 71 Fulton St., New York.
Providence Steam Trap Co., Providence, R. I.
Reliance Gauge Column Co., Cleveland, O. *See adv. page 117.*
Rutzler, E., 178 Centre St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Schoonmaker, A. G., Co., 29 West St., New York.
Schuette & Korting Co., 12th & Thompson Sts., Philadelphia.
Smith, James, & Co., Inc., 411 Race St., Philadelphia, Pa.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Stephens, Roe, Mfg. Co., Detroit, Mich.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Thorpe, Platt & Co., 97 Cedar St., New York. *See adv. page 116.*
Union Steam Specialty Co., Scranton, Pa.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa. *See adv. page 114.*
Watts Regulator Co., Lawrence, Mass.
Welch & Lawson, 210 Centre St., New York.
Western Tube Co., Kewanee, Ill.
Wright Mfg. Co., Detroit, Mich.

137 **VALVES.** Devices for closing and opening pipes.

138 **Air Automatic.** For allowing the escape automatically of entrapped air; as in the case of steam radiators.

American Radiator Co., Chicago, Ill.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Coffin Valve Co., Neponset, Mass.

VALVES, AIR, AUTOMATIC, continued

Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
Davis & Roesch Temperature Controlling Co., 136 Liberty St., New York.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Griffing, A. A., Iron Co., Jersey City, N. J.
Gurney Heater Mfg. Co., 74 Franklin St., Boston, Mass.
Haydenville Co., Haydenville, Mass.
Hoffman & Billings Mfg. Co., Milwaukee, Wis.
Jenkins Bros., 71 John St., New York.
Lawler Water-Feed & Damper Regulator Co., 181 Mercer St., New York.
Lunkenheimer Co., Cincinnati, O.
Mackay Mfg. Co., Newark, N. J.
Magee, Alonzo H., 106-108 Beekman St., New York.
Marsh, Jas. P., & Co., 224 Washington St., Chicago, Ill.
Monash-Younker Co., 205 S. Canal St., Chicago, Ill.
Morgan & Co., 40 Dearborn St., Chicago, Ill.
Nason Mfg. Co., 71 Fulton St., New York.
Penn. Engineering Co., 312 Cherry St., Philadelphia, Pa.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Quincy Valve & Mfg. Co., Quincy, Ill.
Rensselaer Mfg. Co., Troy, N. Y.
Russell, W. A., & Co., 89 Centre St., New York.
Smith, H. B., Co., Westfield, Mass.
Utica Steam Gauge Co., Frankfort, N. Y.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.

139 **Back Pressure.** For throttling the escape of a fluid so as to maintain a certain pressure in the pipes leading to the valve.

American District Steam Co., Lockport, N. Y.
Arthur Co., 188 Front St., New York.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Boston Brass Co., 36 Oliver St., Boston, Mass.
Buckeye Iron & Brass Works, Dayton, O.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Fairbanks Co., Broome & Elm Sts., New York.
Ford, Thos. P., Co., 81 Centre St., New York.
Foster Engineering Co., Newark, N. J.
Haydenville Co., Haydenville, Mass.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Hussey, McCann & Co., 37 Dey St., New York.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 71 John St., New York.
Kelly & Jones Co., Greensburg, Pa.
Kieley & Mueller, 34 W. 13th St., New York.
Klipfel & Thomas Co., 74 W. Lake St., Chicago, Ill.
Locke Regulator Co., Salem, Mass.
Ludlow Valve Mfg. Co., Troy, N. Y.
McGowan, John H., Co., Cincinnati, O.

VALVES, BACK PRESSURE, continued

McNab & Harlin Mfg. Co., 56 John St., New York.
Monash-Younker Co., 205 South Canal St., Chicago, Ill.
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa.
Pratt & Cady Co., Hartford, Conn.
Queen City Brass & Iron Works, Cincinnati, O.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Regester's, J., Sons Co., Baltimore, Md.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

140 **Balance.** Regulating valves in which the pressure is regulated by a weight sliding on a lever arm.

American District Steam Pump Co., Lockport, N. Y.
Arthur Co., 188 Front St., New York.
Coffin Valve Co., Neponset, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Davis, G. M., Regulator Co., 144 Milwaukee, Ave., Chicago, Ill.
Eynon-Evans Manufacturing Co., 1519 Clearfield St., Philda.
Fairbanks Co., Broome & Elm Sts., New York.
Gardner Governor Co., Quincy, Ill.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Kieley & Mueller, 34 W. 13th St., New York.
Klipfel & Thomas Co., 74 W. Lake St., Chicago, Ill.
Mason Regulator Co., 158 Summer St., Boston, Mass
Nason Mfg. Co., 71 Fulton St., New York.
McNab & Harlin Mfg. Co., 56 John St., New York.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Waters Governor Co., 34 Oliver St., Boston, Mass.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa.

141 **Blow Off.** For emptying steam boilers.

Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Best Manufacturing Co., Pittsburg, Pa.
Bonner, Wm. T., & Co., 53 State St., Boston, Mass.
Bordo, L. J., 12th & Thompson Sts., Philadelphia.
Buckeye Iron & Brass Works, Dayton, O.
Cadman, A. W., Manufacturing Co., Pittsburg, Pa.
Central Brass Works, Cincinnati, O.
Coffin Valve Co., Neponset, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Eynon-Evans Manufacturing Co., 1519 Clearfield St., Philda. delphia, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Homestead Valve Manufacturing Co., Pittsburg, Pa.
Jenkins Bros., 71 John St., New York.
Kelly & Jones Co., Greensburg, Pa.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
McNab & Harlin Mfg. Co., 56 John St., New York.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.

VALVES, BLOW-OFF, continued

Pratt & Cady Co., Hartford, Conn.
Queen City Brass & Iron Works, Cincinnati, O.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Reliable Mfg. Co., Pittsburg, Pa.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Watson & McDaniel Co., 146 North 7th St., Philadelphia, Pa.

142 **Check.** Having a valve which rises to allow the passage of the fluid in one direction, but which prevents its return.

Albany Steam Trap Co., Albany, N. Y.
Alpena Industrial Works, Alpena, Mich.
Arthur Co., 188 Front St., New York.
Bailey-Farrell Manufacturing Co., Pittsburg, Pa.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Belknap Manufacturing Co., Bridgeport, Conn.
Best Manufacturing Co., Pittsburg, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Coffin Valve Co., Neponset, Mass.
Cook, A. D., Lawrenceburg, Ind.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
Detroit Lubricator Co., Detroit, Mich.
Draper Mfg. Co., Port Huron, Mich.
Eastwood Wire Manufacturing Co., Belleville, N. J.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Eynon-Evans Manufacturing Co., 1519 Clearfield St., Philda.
Fairbanks Co., Broome and Elm Sts., New York.
Hancock Inspirator Co., 87 Liberty St., New York.
Haydenville Co., Haydenville, Mass.
Hermance Valve Co., Syracuse, N. Y.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Jenkins Bros., 71 John St., New York.
Kelly & Jones Co., Greensburg, Pa.
Kennedy Valve Manufacturing Co., 57 Beekman St., New York.
Kinsey & Mahler Co., Peoria, Ill.
Libby Mfg. Co., 147 Varick St., New York.
Locke Regulator Co., Salem, Mass.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Ludlow Valve Manufacturing Co., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
McDonald, A. Y., & Morrison Manufacturing Co., Dubuque, Ia.
McNab & Harlin Mfg. Co., 56 John St., New York.
Michigan Brass & Iron Works, Detroit, Mich.
Mueller, H., Mfg. Co., Decatur, Ill.
Nelson, Chas., 439 E. 10th St., New York.
New Bedford Boiler & Machine Co., New Bedford, Mass.
Nolte Brass Co., Springfield, O.
Ohio Brass Co., Mansfield, O.
Oil Well Supply Co., Pittsburg, Pa.
Perkes, Chas., 627 Arch St., Philadelphia, Pa.
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Pratt & Cady Co., Hartford, Conn.

VALVES, CHECK, continued

Queen City Brass & Iron Works, Cincinnati, O.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Regester's, J., Sons Co., Baltimore, Md.
Rundle-Spence Manufacturing Co., Milwaukee, Wis.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Springfield Brass Co., Springfield, O.
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Thomas Brass & Iron Co., Waukegan, Ill.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

143 **Chronometer.** Rotary valves fitted to taper seats.

Bonner, Wm. T., & Co., 53 State St., Boston, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Kelly & Jones Co., Greensburg, Pa.
Nason Mfg. Co., 71 Fulton St., New York.
Union Water Meter Co., Worcester, Mass.

144 **Float.** For maintaining a certain level in tanks.

Arthur Co., 188 Front St., New York.
Boston Brass Co., 36 Oliver St., Boston, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
Fairbanks Co., Broome & Elm Sts., New York.
Foster, F. W., Manufacturing Co., 6 Portland St., Boston, Mass.
Harris, Geo. P., & Bro., 62 W. Lake St., Chicago, Ill.
Haydenville Co., Haydenville, Mass.
Hermance Valve Co., Syracuse, N. Y.
Homestead Valve Manufacturing Co., Pittsburg, Pa.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
McNab & Harlin Mfg. Co., 56 John St., New York.
Novelty Mfg. Co., Omaha, Neb.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.

145 **Foot.** Used at the foot of suction pipes to maintain a full supply of the fluid pumped.

Arthur Co., 188 Front St., New York.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Coffin Valve Co., Neponset, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Fairbanks Co., Broome & Elm Sts., New York.
Haydenville Co., Haydenville, Mass.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Jarecki Mfg. Co., Erie, Pa.
Kelly & Jones Co., Greensburg, Pa.
Ludlow Valve Manufacturing Co., Troy, N. Y.
McGowan, John H., Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Michigan Brass & Iron Works, Detroit, Mich.
Nelson, Chas., 439 E. 10th St., New York.
New Bedford Boiler & Machine Co., New Bedford, Mass.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa.
Stephens, Roe, Manufacturing Co., Detroit, Mich.

VALVES, FOOT, continued

Western Tube Co., Kewanee, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

146 **Gate.** In which the internal opening is closed by a piece moving across a seat at right angles to its axis.

Albany Steam Trap Co., Albany, N. Y.
American District Steam Co., Lockport, N. Y.
American Valve Co., Coxsackie, N. Y.
Arthur Co., 188 Front St., New York.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Best Manufacturing Co., Pittsburg, Pa.
Bourbon Copper & Brass Works, Cincinnati, O.
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Coffin Valve Co., Neponset, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Dame & Townsend Co., 76 John St., New York.
Darling Pump & Mfg. Co., Williamsport, Pa.
Drummond, M. J., & Co., 192 Broadway, New York.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Eddy Valve Co., South Waterford, N. Y.
Fairbanks Co., Broome and Elm Sts., New York.
Forest City Brass Works, Cleveland, O.
Hall, C. F., & Son, Syracuse, N. Y.
Haydenville Co., Haydenville, Mass.
Hoffman & Billings Co., Milwaukee, Wis.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 71 John St., New York.
Kelly & Jones Co., Greensburg, Pa.
Kennedy Valve Manufacturing Co., 57 Beekman St., New York.
Libby Mfg. Co., 147 Varick St., New York.
Ludlow Valve Mfg. Co., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
McGowan, John H., Co., Cincinnati, O.
McLean, John, 440 Water St., New York.
McNab & Harlin Mfg. Co., 56 John St., New York.
Michigan Brass & Iron Works, Detroit, Mich.
Nelson Valve Co., Wyndmoor, Pa.
Oil Well Supply Co., Pittsburg, Pa.
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa.
Pleuger & Henger Manufacturing Co., St. Louis, Mo.
Powell, Wm., Co., Cincinnati, O.
Pratt & Cady Co., Hartford, Conn.
Queen City Brass & Iron Works, Cincinnati, O.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Rensselaer Manufacturing Co., Cohoes, N. Y.
Ross Valve Co., Troy, N. Y.
Smith, A. P., Mfg. Co., Newark, N. J.
South Park Foundry & Machine Co., St. Paul, Minn.
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Thomas Brass & Iron Co., Waukegan, Ill.
Vincent Valve Co., Sandusky, O.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

VALVES, GATE, continued

Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

147 **Globe.**. Disc valves having globular bodies and the openings in the same line.

Albany Steam Trap Co., Albany, N. Y.
Bailey-Farrell Manufacturing Co., Pittsburg, Pa.
Bashlin Co., Warren, Pa.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Belknap Manufacturing Co., Bridgeport, Conn.
Best Manufacturing Co., Pittsburg, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Coffin Valve Co., Neponset, Mass.
Columbus Brass Co., Columbus, O.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Detroit Lubricator Co., Detroit, Mich.
Eastwood Wire Manufacturing Co., Belleville, N. J.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Eynon-Evans Manufacturing Co., 1519 Clearfield St., Philda.
Fairbanks Co., Broome and Elm Sts., New York.
Gardner Governor Co., Quincy, Ill.
Hall, C. F., & Son, Syracuse, N. Y.
Hancock Inspirator Co., 87 Liberty St., New York.
Harvey's A., Sons Manufacturing Co., Detroit, Mich.
Haydenville Co., Haydenville, Mass.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Hoffman & Billings Manufacturing Co., Milwaukee, Wis.
Homestead Valve Manufacturing Co., Pittsburg, Pa.
Jarecki Manufacturing Co., Ltd., Erie, Pa.
Jenkins Bros., 71 John St., New York.
Kelly & Jones Co., Greensburg, Pa.
Kennedy Valve Manufacturing Co., 57 Beekman St., New York.
Kinsey & Mahler Co., Peoria, Ill.
Libby Mfg. Co., 147 Varick St., New York.
Locke Regulator Co., Salem, Mass.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
McCambridge & Co., Ltd., 523 Cherry St., Philadelphia, Pa.
McNab & Harlin Mfg. Co., 56 John St., New York.
McGowan, John H., Co., Cincinnati, O.
Mackay Manufacturing Co., Newark, N. J.
Nelson Valve Co., Wyndmoor, Pa.
New Bedford Boiler & Machine Co., New Bedford, Mass.
Nolte Brass Co., Springfield, O.
Ohio Brass Co., Mansfield, O.
Oil Well Supply Co., Pittsburg, Pa.
Pemberthy Injector Co., Detroit, Mich.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Pratt & Cady Co., Hartford, Conn.
Queen City Brass & Iron Works, Cincinnati, O.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Regester's, J., Sons Co., Baltimore, Md.
Rundle-Spence Manufacturing Co., Milwaukee, Wis.

VALVES, GLOBE, continued

Russell, W. A., & Co., 89 Centre Street, New York.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Springfield Brass Co., Springfield, O.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Thomas Brass & Iron Co., Waukegan, Ill.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

148 **Hydraulic.** For liquids under heavy pressure.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Arthur Co., 188 Front St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Best Manufacturing Co., Pittsburg, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Burroughs, Chas., Co., Newark, N. J.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Drummond, M. J., & Co., 192 Broadway, New York.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Eynon-Evans Manufacturing Co., 1519 Clearfield St., Philda.
Fairbanks Co., Broome & Elm Sts., New York.
Falkenau-Sinclair Machine Co., 109-115 W. 22d St., Philda.
Homestead Valve Manufacturing Co., 107 Wood St., Pittsburg, Pa.
Ireson, Chas. L., 148 High St., Boston, Mass.
Kennedy Valve Mfg. Co., 57 Beekman St., New York.
Libby Mfg. Co., 147 Varick St., New York.
McCambridge & Co., 523 Cherry St., Philadelphia, Pa.
Nason Mfg. Co., 71 Fulton St., New York.
Nelson Valve Co., Wyndmoor, Pa.
Oil Well Supply Co., Pittsburg, Pa.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Powell, Wm., Co., Cincinnati, O.
Pratt & Cady Co., Hartford, Conn.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Reliable Mfg. Co., Pittsburg, Pa.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Watson & McDaniel Co., 146 N. 7th St., Philadelphia, Pa.
See adv. page 114.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

149 **Pop.** See 154, Safety Pop Valve.

150 **Pump.** Suction and delivery check valves forming parts of pumps.

Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Delaware Hard Fibre Co., Wilmington, Del.
Fairbanks Co., Broome & Elm Sts., New York.
Jenkins Bros., 71 John St., New York.
Libby Mfg. Co., 147 Varick St., New York.

VALVES, PUMP, continued

McNab & Harlin Mfg. Co., 56 John St., New York.
Marston, I. G., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 118.*
Mineralized Rubber Co., 18 Cliff St., New York.
Ohio Brass Co., Mansfield, O.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Power Specialty Co., Buffalo, N. Y.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.

151 **Radiator.** For steam heating radiators.

Albany Steam Trap Co., Albany, N. Y.
Alpena Industrial Works, Alpena, Mich.
American Valve Co., Coxsackie, N. Y.
Argon Manufacturing Co., Denver, Col.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Belknap Manufacturing Co., Bridgeport, Conn.
Blake & Andros, 28 Portland St., Boston, Mass.
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Cochrane, J. A., Cleveland, O.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Detroit Lubricator Co., Detroit, Mich.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Fairbanks Co., Broome and Elm Sts., New York.
Forest City Brass Works, Cleveland, O.
Gurney Heater Mfg. Co., 74 Franklin St., Boston, Mass.
Harvey's, A., Sons Manufacturing Co., Detroit, Mich.
Haydenville Co., Haydenville, Mass.
Hoffman, B., Mfg. Co., Milwaukee, Wis.
Hoffman & Billings Manufacturing Co., Milwaukee, Wis.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 71 John Street, New York.
Kelly & Jones Co., Greensburg, Pa.
Kennedy Valve Manufacturing Co., 57 Beekman St., New York.
Libby Mfg. Co., 147 Varick St., New York.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
McNab & Harlin Mfg. Co., 56 John St., New York.
Mackay Manufacturing Co., Newark, N. J.
Michigan Brass & Iron Works, Detroit, Mich.
Monash & Younker Co., 203 S. Canal St., Chicago, Ill.
Mott, J. L., Iron Works, 84 Beekman St., New York.
Ohio Brass Co., Mansfield, O.
Ohio Brass & Iron Manufacturing Co., Cleveland, O.
Penn Engineering Co., 312 Cherry St., Philadelphia, Pa.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Powell, Wm., Co., Cincinnati, O.
Queen City Brass & Iron Works, Cincinnati, O.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Regester's, J., Sons Co., Baltimore, Md.
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Thomas Brass & Iron Co., Waukegan, Ill.
Utica Steam Gauge Co., Frankfort, N. Y.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

152 **Reducing.** For maintaining a certain pressure in the pipes leading from the valve. See 122, Regulators, Pressure.

VALVES, continued

153 **Safety, Ball and Lever.** For relieving excess pressure in steam boilers, tanks, etc.

Alpena Industrial Works, Alpena, Mich.
Arthur & Co., 188 Front St., New York.
Bailey-Farrell Manufacturing Co., Pittsburg, Pa.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Belknap Manufacturing Co., Bridgeport, Conn.
Best Manufacturing Co., Pittsburg, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Central Brass Works, Cincinnati, O.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Consolidated Safety Valve Co., 89 Liberty St., New York.
Craig, E. A., 110 Liberty St., New York.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Fairbanks Co., Broome & Elm Sts., New York.
Globe Brass Works, Detroit, Mich.
Harvey's, A., Sons Manufacturing Co., Detroit, Mich.
Haydenville Co., Haydenville, Mass.
Hennebohle, Frank, S. Chicago Ave. & Erie St., Chicago, Ill.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Hoffman & Billings Manufacturing Co., Milwaukee, Wis.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 71 John Street, New York.
Kelly & Jones Co., Greensburg, Pa.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
McDonald, A. Y., & Morrison Manufacturing Co., Dubuque, Ia.
McGowan, John H., Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Pittsburg Valve Foundry & Construction Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Queen City Brass & Iron Works, Cincinnati, O.
Quincy Valve Manufacturing Co., Quincy, Ill.
Regester's, J., Sons, Baltimore, Md.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Manufacturing Co., 114 E. Dedham St., Boston, Mass.
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Thomas Brass & Iron Co., Waukegan, Ill.
Utica Steam Gauge Co., Frankfort, N. Y.
Walworth Manufacturing Co., 134 Federal St., Boston, Mass.
Western Tube Co., Kewanee, Ill.

154 **Safety Pop.** In which the pressure is counterbalanced by a spring of known strength.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Central Brass Works, Cincinnati, O.
Coale Muffler & Safety Valve Co., Baltimore, Md.
Consolidated Safety Valve Co., 87 Liberty St., New York.
Crane Co., 10 N. Jefferson St., Chicago, Ill.

VALVES, SAFETY POP, continued

Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Fairbanks Co., Broome & Elm Sts., New York.
Foster Engineering Co., Newark, N. J.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Pittsburg Valve, Foundry & Construction Co., Pittsburg, Pa.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Safety Cylinder Valve Co., Mansfield, O.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Utica Steam Gauge Co., Frankfort, N. Y.

155 **Throttle.** Stop valves used for starting and stopping engines.

Atlantic Works, 70 Borden St., E. Boston, Mass.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Bonner, Wm. T., & Co., 53 State St., Boston, Mass.
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Chapman Valve Manufacturing Co., Indian Orchard, Mass.
Craig, E. A., 110 Liberty St., New York.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Fairbanks Co., Broome & Elm Sts., New York.
Haydenville Co., Haydenville, Mass.
Hoffmann, B., Mfg. Co., Milwaukee, Wis.
Jarecki Mfg. Co., Erie, Pa.
Keystone Brass Co., Erie, Pa.
Lane & Bodley Co., Cincinnati, O.
Libby Mfg. Co., 147 Varick St., New York.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
New Bedford Boiler & Machine Co., New Bedford, Mass.
Ohio Brass Co., Mansfield, O.
Pittsburg Valve, Foundry & Construction Co., Pittsburg, Pa.
Powell, Wm., Co., Cincinnati, O.
Pratt & Cady Co., Hartford, Conn.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Walworth Manufacturing Co., 134 Federal Street, Boston, Mass.

156 **Water Relief.** Safety valves on steam engines to prevent cylinder breakage on account of water.

Arthur Co., 188 Front St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 North Broad St., Philadelphia, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Consolidated Safety Valve Co., 87 Liberty St., New York.
Craig, E. A., 110 Liberty St., New York.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Crosby Steam Gauge & Valve Co., 97 Oliver St., Boston, Mass.
Davis, G. M., Regulator Co., 144 Milwaukee Ave., Chicago, Ill.
D'Este, Julian, Co., 24 Canal St., Boston, Mass.
Fairbanks Co., Broome and Elm Sts., New York.
Hermance Valve Co., Syracuse, N. Y.

VALVES, WATER RELIEF, continued

Kieley & Mueller, 34 W. 13th St., New York.
Locke Regulator Co., Salem, Mass.
Lombard Governor Co., 36 Whittier St., Boston, Mass.
Lonergan, J. E., & Co., 211 Race Street, Philadelphia, Pa.
Ludlow Valve Manufacturing Co., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Michigan Brass & Iron Works, Detroit, Mich.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Pittsburg Valve, Foundry & Construction Co., Pittsburg, Pa.
Quincy Valve & Manufacturing Co., Quincy, Ill.
Safety Cylinder Valve Co., Mansfield, O.
Schutte & Korting Co., 12th & Thompson Sts., Philadelphia.
Star Brass Manufacturing Co., 114 E. Dedham St., Boston,
Stephens, Roe, Manufacturing Co., Detroit, Mich.
Watson & McDaniels Co., 146 N. 7th St., Philadelphia, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

157 **"Y."** In which the openings are opposite, and the valve stems inclined to an angle of about 45 deg. with the axis.

Bonner, Wm. T., & Co., 53 State St., Boston, Mass.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Haydenville Co., Haydenville, Mass.
Jenkins Bros., 71 John St., New York.
Libby Mfg. Co., 147 Varick St., New York.
Lunkenheimer Co., Cincinnati, O.
Pratt & Cady Co., Hartford, Ct.
Western Tube Co., Kewanee, Ill.

158 **WELDING MACHINES, FLUE.**

Draper Mfg. Co., Port Huron, Mich.
Grote Mfg. Co., Evansville, Ind.
Maddock & Herschell, Princeton, Ind.

159 **WHISTLES, CHIME.** A combination of whistles so proportioned as to make a harmonious sound.

Ashcroft Mfg. Co., 89 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 No. Broad St., Philadelphia, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Kinsley Mfg. Co., Bridgeport, Conn.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O. *See adv. page 111.*
McNab & Harlin Mfg. Co., 56 John St., New York.
Ohio Brass Co., Mansfield, O.
Powell, Wm. Co., Cincinnati, O.
Queen City Brass & Iron Works, Cincinnati, O.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Sherwood Mfg. Co., Buffalo, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.

WHISTLES, continued

160 **Plain.** Operated by steam, air or gas, under pressure.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 No. Broad St., Philadelphia, Pa.
Buckeye Iron & Brass Works, Dayton, O.
Central Brass Works, Cincinnati, O.
Cochrane, J. A., Cleveland, O.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Haydenville Co., Haydenville, Mass.
Hoffman & Billings Mfg. Co., Milwaukee, Wis.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Kelly & Jones Co., Greensburg, Pa.
Kinsley Mfg. Co., Bridgeport, Conn.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York.
Nolte Brass Co., Springfield, O.
Powell, Wm., Co., Cincinnati, O.
Queen City Brass & Iron Works, Cincinnati, O.
Regester's, J., Sons, Baltimore, Md.
Schaeffer & Rudenberg Mfg. Co., St. Edwards and Bedford Sts., Brooklyn, N. Y.
Springfield Brass Co., Springfield, O.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Thomas Brass & Iron Co., Waukegan, Ill.
Union Water Meter Co., Worcester, Mass.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.

---

161 POWER TRANSMISSION APPLIANCES.

162 BEARINGS, SHAFTING.

163 **Base Plates.** For supporting pillow blocks or journal boxes.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Cresson, Geo. V., Co., Allegheny Ave. W. of 17th St., Philda.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Howard Iron Works, Buffalo, N. Y.
Hunter, Jas., Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.

BASE PLATES, continued

Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago Ill.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Robins Conveying Belt Co., Park Row Bldg., New York.
Townsend Furnace & Machine Shop, Albany, N. Y.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

164 **Blocks, Pillow.** Low shaft bearings, resting on the floor.
Abele, Chris, 537 West 50th St., New York.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O.
Hill Clutch Co., Cleveland, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kelly Foundry & Machine Co., Goshen, Ind.
Kilburn, Lincoln & Co., Fall River, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago Ill.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Olney & Warrin, 36 Dey St., New York.
Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, Jas. Woolen Machinery Co., 411 Race St., Philda, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Tranter-Davison Mfg. Co., Pittsburg, Pa.
Valley Iron Works, Williamsport, Pa.
Welch, T. F., & Co., 55 Sudbury St., Boston, Mass.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Willamette Iron & Steel Works, Portland, Ore.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

165 **Boxes, Journal.** The parts of bearings in which the shaft rotates.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.

BOXES, JOURNAL, continued

Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Hess-Snyder Co., Massillon, O.
Howard Iron Works, Buffalo, N. Y.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas. & Co., 241 So. Jefferson St., Chicago, Ill.
Kilburn, Lincoln, & Co., Fall River, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Valley Iron Works, Williamsport, Pa.
Welch, T. F., & Co., 55 Sudbury St., Boston, Mass.
Weller Mfg. Co., 118 North Ave., Chicago., Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Woods, T. B., Sons, Chambersburg, Pa.

166 **Brackets, Wall.** Brackets fastened to the wall, for carrying bearings.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, N. Y.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago, Ill.
Liddell Co., Charlotte, N. C.
Medart Patent Pulley Co., St. Louis, Mo.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, Jas., Woolen Machinery Co., 411 Race St., Philda, Pa.

BRACKETS, WALL, continued

Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

167 **BELTING.**

168 **Canvas, Stitched and Cotton.**

Boston Belting Co., 256 Devonshire St., Boston, Mass.
Chesapeake Belting Co., Baltimore, Md.
Empire Manufacturing Co., Lockport, N. Y.
Empire Rubber Mfg. Co., Trenton, N. J.
Fayerweather & Ladew, Inc., 91 Liberty St., New York.
Gandy Belting Co., Baltimore, Md.
Gilmer, L. H., & Co., 3952 Market St., Philadelphia, Pa.
Ireson, Chas. L., 148 High St., Boston, Mass.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Lake Shore Rubber Co., Erie, Pa.
Main Belting Co., 1233 Carpenter St., Philadelphia, Pa.
Pennsylvania Rubber Co., Jeannette, Pa.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.
Robins Conveying Belt Co., Park Row Bldg, New York.
Russell Mfg. Co., Middletown, Conn.
Rossendale-Reddaway Belting & Hose Co., Newark, N. J.
Sawyer Belting Co., East Cambridge, Mass.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.

169 **Chain or Link.**

Aultman Co., Canton, O.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Bradlee & Co., Beach St., cor. E. Susquehanna Ave., Philda, Pa.
Bridgeport Chain Co., Bridgeport, Conn.
Buhl Malleable Iron Co., Detroit, Mich.
Dodge Manufacturing Co., Mishawaka, Ind.
Federal Mfg. Co., American Trust Bldg., Cleveland, O. *See adv. page 126.*
Garry Iron & Steel Co., Cleveland, O.
Greenwald, I. & E., Co., 720 E. Main St., Cincinnati, O.
Ireson, Chas. L., 148 High St., Boston, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Locke Steel Belt Co., Bridgeport, Conn.
McKay, Jas., & Co., McKees Rocks, Pa.
Michigan Sprocket Chain Co., Detroit, Mich.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Nicholson & Co., Rankin Station, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Roberts Engineering Co., Pittsburg, Pa.
Speidel, J. G., Reading, Pa.
Standard Chain Co., Pittsburg, Pa.
Turner, Vaughn & Taylor, Cuyahoga Falls, O.

170 **Hair.**

Rossendale-Reddaway Belting & Hose Co., Newark, N. J.

BELTING, continued

171 **Leather.**

Akron Belting Co., Akron, O.
Albany Belting & Supply Co., Albany, N. Y.
Alexander Bros., 410 North 3rd Street, Philadelphia, Pa.
Allen, W. D., Manufacturing Co., 151 Lake St., Chicago, Ill.
Arny, C. W., & Son, 228 North 3rd St., Philadelphia, Pa.
Barnum Bros. Co., Troy, N. Y.
Bay State Belting Co., Salem, Mass.
Bickford & Francis Belting Co., Buffalo, N. Y.
Bodifield Belting Co., Cleveland, O.
Brooklyn Leather Belting Co., 42 South 6th St., Brooklyn, N. Y.
Charlotte Supply Co., Charlotte, N. C.
Chicago Belting Co., 69 So. Canal St., Chicago, Ill.
Coe & Brown, New Haven, Conn.
Crescent Belting Co., St. Louis, Mo.
Cross Bros. & Co., Rochester, N. Y.
Evansville Leather & Belting Co., Evansville, Ind.
Fayerweather & Ladew, Inc., 91 Liberty St., New York.
Fitzgerald, M. J., 58 Centre St., New York.
Gratton & Knight, Worcester, Mass.
Hide Leather & Belting Co., Indianapolis, Ind.
Holyoke Belting Co., Holyoke, Mass.
Hudson Belting Co., Worcester, Mass.
Hunt, Henry C., Co., 32 Oliver St., Boston, Mass.
Ireson, Chas. L., 148 High St., Boston, Mass.
Jewell Belting Co., Hartford, Conn.
Lynch, Edw., & Co., 19 South Canal St., Chicago, Ill.
Meier's, Joseph, Sons, 291 Market St., Newark, N. J.
Milwaukee Leather Belting Co., Milwaukee, Wis.
Missouri Belting Co., St. Louis, Mo.
Moloney-Bennet Belting Co., 36 So. Canal St., Chicago, Ill.
Munson, Chas., Belting Co., 40 South Canal St., Chicago, Ill.
New York Leather Belting Co., 8 Ferry St., New York.
Norwich Belt Mfg. Co., Norwich, Conn.
Nott, W. S., Co., Minneapolis, Minn.
Page Belting Co., Concord, N. H.
Palmer, N., & Co., Bridgeport, Conn.
Peerless Belting Co., Buffalo, N. Y.
Rahmann, Geo., & Co., 31 Ferry St., New York.
Raniville, F., Grand Rapids, Mich.
Rhoades, J. E., & Son, Wilmington, Del.
Schieren, Chas. A., & Co., 45 Ferry St., New York.
Sikes, S. R., Co., Minneapolis, Minn.
Smith, James, & Co., 411 Race St., Philadelphia, Pa.
Sumner, Wm., Belting Co., Tolland, Conn.
Troy Belting & Supply Co., Troy, N. Y.
Ulmer Leather Co., Norwich, Conn.
Union Belt Co., Fall River, Mass.
Williams, I. B., & Son, Dover, N. H.
Wise & Bailey, Front & Race Sts., Philadelphia, Pa.

172 **Rawhide.**

Chicago Rawhide Manufacturing Co., 75 Ohio St., Chicago, Ill.
Ireson, Chas. L., 148 High St., Boston, Mass.
Kelton-Bruce Mfg. Co., 9 to 13 Franklin St., Salem, Mass.
Shultz Belting Co., St. Louis, Mo.

BELTING, RAWHIDE, continued

Western Rawhide & Belting Co., Milwaukee, Wis.
Williams, I. B., & Son, Dover, N. H.

173 **Rubber.**

Akron Belting Co., Akron, O.
Boston Belting Co., 256 Devonshire St., Boston, Mass.
Cleveland Rubber Works, Cleveland, O.
Combination Rubber & Belting Co., Bloomfield, N. J.
Crescent Belting & Packing Co., Trenton, N. J.
Diamond Rubber Co., Akron, O.
Empire Rubber Mfg. Co., Trenton, N. J.
Goodrich, B. F., Co., Akron, O.
Goodyear Rubber Co., 787 Broadway, New York.
Gutta Percha & Rubber Manufacturing Co., 126 Duane St., N. Y.
Hamilton Rubber Mfg. Co., Trenton, N. J.
Home Rubber Co., Trenton, N. J.
Ireson, Chas. L., 148 High St., Boston, Mass.
Jeffrey Mfg. Co., Columbus, O.
Lake Shore Rubber Co., Erie, Pa.
Manhattan Rubber Mfg. Co., 18 Vesey St., New York.
Mechanical Rubber Co., 230 Randolph St., Chicago, Ill.
Mineralized Rubber Co., Inc., 18 Cliff St., New York.
New York Belting & Packing Co., 25 Park Place, New York.
New York Rubber Co., 84 Reade St., New York.
Peerless Rubber Mfg. Co., 16 Warren St., New York. *See adv. page 110.*
Pennsylvania Rubber Co., Jeannette, Pa.
Republic Rubber Co., Youngstown, O.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.
Revere Rubber Co., 77 Bedford St., Boston, Mass.
Robins Conveying Belt Co., Park Row Building, New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Stokes Rubber Co., Trenton, N. J.
Sumner, Wm., Belting Co., Tolland, Conn.
Trenton Rubber Manufacturing Co., Trenton, N. J.
Union Belt Co., Fall River, Mass.
United & Globe Rubber Manufacturing Co., Trenton, N. J.
Voorhees Rubber Manufacturing Co., Jersey City, N. J.
Waterbury Rubber Mfg. Co., 49 Warren St., New York.
Whitehead Bros. Rubber Co., Trenton, N. J.

174 **BELT CARRIERS.** Pulleys for supporting a long belt between the driving and the driven pulleys.

Abele, Chris., 537 W. 50th St., New York.
Aultman Co., Canton, O.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Boston Belting Co., 256 Devonshire St., Boston, Mass.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Garry Iron & Steel Co., Cleveland, O.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kilburn, Lincoln & Co., Fall River, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.

BELT CARRIERS, continued

Link Belt Engineering Co., Nicetown, Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.
Smith, Jas., Woolen Machinery Co., 411 Race St., Philda, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

175 **BELT DRESSING.** Preparations for preserving belting and increasing its clinging properties.

Allen, W. D., Manufacturing Co., 151 Lake St., Chicago, Ill.
American Oil Co., Providence, R. I.
Anchor Belt Grease Manufacturing Co., Mechanicsburg, Pa.
Barnum Bros. Co., Troy, N. Y.
Belden, A. G., & Co., 145 Maiden Lane, New York.
Buffalo Specialty Manufacturing Co., Buffalo, N. Y.
Cling Surface Mfg. Co., Buffalo, N. Y. *See adv. page 103.*
Dixon, Jos., Crucible Co., Jersey City, N. J.
Eagle Oil & Supply Co., 104 Broad St., Boston, Mass.
Fayerweather & Ladew, Inc., 91 Liberty St., New York.
Goodyear Rubber Hose & Packing Co., 221 Chestnut St., Philda.
Hendee Wire Brush Co., Milwaukee, Wis.
Imperial Leather Preserver Manufacturing Co., 212 South 3rd St., Philadelphia, Pa.
Jewell Belting Co., Hartford, Conn.
Keystone Lubricating Co., 20th St.., cor. Allegheny Ave., Philda.
Leather Preserver Mfg. Corporation, 21 Monroe St., Chicago, Ill.
Montgomery Bros., 48 North Front St., Philadelphia, Pa.
Munson, Chas., Belting Co., 40 South Canal St., Chicago, Ill.
New York Leather Belting Co., 8 Ferry St., New York.
Palmer, N., & Co., Bridgeport, Conn.
Peerless Lubricant Mfg. Co., 29 West St., New York.
Pennsylvania Carbon-Graphite Co., Scranton, Pa.
Pittsburg Gage & Supply Co., Pittsburg, Pa.
Post, E. L., & Co., 50 Cliff St., New York.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.
Rhoades, J. E., & Son, Wilmington, Del.
Robins Conveying Belt Co., Park Row Bldg., New York.
Schieren, Chas. A., & Co., 45 Ferry St., New York.
Schoonmaker, A., & Co., 29 West St., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Southwick, Geo. W., & Co., 149 Centre St., New York.
Stephenson Manufacturing Co., Albany, N. Y.
Watt's, John M., Sons, 123 S. 2d St., Philadelphia, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.

176 **BELT FASTENERS.** For joining the ends of belts.

Bristol Co., Waterbury, Conn.
Buffalo Specialty Mfg. Co., Buffalo, N. Y.
Covel Mfg. Co., 8-10 South Canal St., Chicago, Ill.
Crescent Steel Co., Pittsburg, Pa.
Fayerweather & Ladew, Inc., 91 Liberty St., New York.
Gilmer, L. H., & Co., 3952 Market St., Philadelphia, Pa.
Greene, Tweed & Co., 17 Murray St., New York.
Hartman Hide & Leather Co., St. Louis, Mo.
Jewell Belting Co., Hartford, Conn.
Kelley Bros. & Spielman, Swanson, cor. Moore St., Philda, Pa.
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.
Robins Conveying Belt Co., Park Row Bldg., New York.

BELT FASTENERS, continued

Sawyer Hardware & Supply Co., Pawtucket, R. I.
Southwick, Geo., & Co., 149 Centre St., New York.
Talcot, W. O., Providence, R. I.
Thacher Belting Hook Co., 245 Crawford Rd., Cleveland, O.
Webb Hinge Belt Hook Co., Boonton, N. J.

177 **BELT LACING MACHINES.** Machines for joining belts.

Diamond Drill & Machine Co., Birdsboro, Pa. *See adv. page 123.*
Peerless Belt Lacing Machine Co., Swanson & Moore Sts., Philadelphia, Pa. *See adv. page 119.*
Quaker City Rubber Co., 409 Market St., Philadelphia, Pa.

178 **BELT TIGHTENERS.** Loose pulleys for taking up the slack of belts.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Goldens Foundry & Machine Co., Columbus, Ga.
Hill Clutch Co., Cleveland, O.
Howard Iron Works, Buffalo, N. Y.
Hunt, Rodney Machine Co., Orange, Mass.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Norwalk Iron Works, South Norwalk, Conn. *See adv. page 116.*
Poole Engineering & Machine Co., Baltimore, Md.
Quincy Engine Works, Quincy, Ill.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton st., Philadelphia, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Co., Albany, N .Y.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

179 **BUSHINGS.** Tubes or annuli for reducing the diameter of holes in pulleys, etc.

Abele, Chris., 537 W. 50th St., New York.
Boston Brass Co., 36 Oliver St., Boston, Mass.
Boston & Lockport Block Co., 160 Commercial St., Boston, Mass.
Case Mfg. Co., Columbus, Ohio.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Graphite Lubricating Co., Bound Brook, N. J.

BUSHINGS, continued

Hill Clutch Co., Cleveland, O.
Hunter, James, Machine Co., North Adams, Mass.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. and Lehigh Ave., Philda, Pa.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Pittsburg Pulley Co., Pittsburg, Pa.
Robins Conveying Belt Co., Park Row Bldg., New York.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.

180 **CLUTCHES.** Devices operating by friction or interlocking, for securing or breaking rotating continuity as between shafts, or a pulley and a shaft.

181 **Friction.** Adapted to transmitting motion by frictional contact and to be engaged and disengaged when machinery is in motion.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Benedict Mfg. Co., 7 Rochester St., Salamanca, N. Y.
Brown, A. & F., Co., 25 Dey St., New York.
Byers, John F., Machine Co., Ravenna, O.
Carruthers-Fithian Clutch Co., Grove City, Pa.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Conn.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Massillon, O.
Hill Clutch Co., Cleveland, O.
Hopkins Machine Works, Bridgeton, R. I.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Johnson Carlyle Machine Co., Hartford, Conn.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
McMahon & Co., Worcester, Mass.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. and Lehigh Ave., Philadelphia, Pa.
Oesterlein Mche. Co., Cincinnati, O.
Poole Engineering & Machine Co., Baltimore, Md.
Reeves Pulley Co., Columbus, Ind.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelhpia, Pa.
Sinclair-Scott Co., Baltimore, Md.
Smith, F. R., Franklin Falls, N. H.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.

CLUTCHES, FRICTION, continued

Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

182 **Safety Three Part.** Made in three pieces, two of which are keyed firmly to the ends of the shaft to be connected; the third piece slides over and connects the other two.

Falls Rivet & Machine Co., Cuyahoga Falls, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.

183 **Wood Split Pulley.** Adapted for use with wood split pulleys. See 227, Wood Split Pulleys.

184 **CLUTCH SHIFTING MECHANISM.** For locking and unlocking friction clutches.

Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philda, Pa.
Lane & Bodley Co., Cincinnati, O.
Moore & White Co., 15th St. & Lehigh Ave., Philadalphia, Pa.
Robins Conveying Belt Co., Park Row Bldg., New York.

185 **COLLARS.** Rings for holding shafting or loose pulleys in proper position.

186 **Plain Set.** Having set screws for clamping.

Abele, Chris., 537 W. 50th St., New York.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Kelly Foundry & Machine Co., Goshen, Ind.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.

187 **Safety Set.** Provided with a clamping device which does not project beyond the collar.

Brown, A. & F., Co., 25 Dey St., New York.

COLLARS, SAFETY SET, continued

Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Cumberland Steel Co., Cumberland, Md.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Conn.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machinery Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

188 **CORDAGE.** See 228, Rope.

189 **COUNTERSHAFTS.** Short shafts carrying tight and loose pulleys or clutches, for starting or stopping machines by means of a shifting lever.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Oesterlein Mche. Co., Cincinnati, O.
Reeves Pulley Co., Columbus, Ind.
Robins Conveying Belt Co., Park Row Bldg, New York.
Ross, Josiah, Buffalo, N. Y.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Speed Changing Pulley Co., Indianapolis, Ind.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Wheaton Machine Co., 368 Congress St., Boston, Mass.
White, John A., Co., Dover, N. H.
Wilmarth & Morman Co., Grand Rapids, Mich.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Woods's, T. B., Sons, Chambersburg, Pa.

190 **COUPLINGS.** Devices for securing together the ends of shafts.

COUPLINGS, continued

191 **Clamp.** Shaft couplings in which the shafts are clamped by transverse bolts.

Abele, Chris., 537 West 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Almond, T. R., 83 Washington St., Brooklyn, N. Y.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Howard Iron Works, Buffalo, N. Y.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Valley Iron Works, Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

192 **Compression.** That grip the shafts by means of tapered parts forced against the shafts by longitudinal pressure.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, Ohio.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hunt, Rodney, Machine Co., Orange, Mass.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas. & Co., 241 So. Jefferson St., Chicago, Ill.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Oneida Steel Pulley Co., Oneida, N. Y.
Perkins, B. F., & Son, Holyoke, Mass.
Poole Engineering & Machine Co., Baltimore, Md.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Shaw Coupling Co., Syracuse, N. Y.
Valley Iron Works, Williamsport, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
White, John A., Co., Dover, N. H.
Williamsport Clutch & Pulley Co., Williamsport, Pa.

COUPLINGS, COMPRESSION, continued

Wood's, T. B., Sons, Chambersburg, Pa.

193 **Flanged or Plate.** Consisting of flanges keyed to the shafts and bolted together.

Abele, Chris., 537 West 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Cumberland Steel Co., Cumberland, Md.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Fairbanks Co., Broome and Elm Sts., New York.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Massillon, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jefferson Mfg. Co., Lexington, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Kelly Foundry & Machine Co., Goshen, Ind.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Link-Belt Machinery Co., 39th St., and Stewart Ave., Chicago.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Machinery Co., 411 Race St., Philda, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Valley Iron Works, Williamsport, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
White, John A., Co., Dover, N. H.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

194 **Friction.** Shaft couplings driven by frictional contact.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
American Twist Drill Co., Laconia, N. H.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Eastern Machinery Co., New Haven, Conn.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Massillon, O.

COUPLINGS, FRICTION, continued

Hill Clutch Co., Cleveland, O.
Hodgson, E. A., Laconia, N. H.
Hopkins Machine Works, Bridgeton, R. I.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
McMurray, C. F., Co., Troy, N. Y.
Mason, Volney W., & Co., Providence, R. I.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. and Lehigh Ave., Philadelphia, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, S., Morgan Co., York, Pa.
Smith, Jas., Woolen Machinery Co., 411 Race St., Philda, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Strait, H. N. Mfg. Co., Kansas City, Kan.
Townsend Furnace & Machine Shop, Albany, N. Y.
White, John A., Co., Dover, N. H.
Willamette Iron & Steel Works, Portland, Ore.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

195 **Jaw or Clutch.** Positively engaged by jaws or projections on the face of the opposite parts.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New Work.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, Jas., Woolen Machinery Co., 411 Race St., Philadelphia.
Wood's, T. B., Sons, Chambersburg, Pa.

196 **Sleeve.** See 202, Wedge Couplings.

Brown, A. & F., Co., 25 Dey St., New York.

COUPLINGS, SLEEVE, continued

Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Goldens Foundry & Machine Co., Columbus, Ga.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

197 **Spiral Jaw.** Operated by jaws which intermesh spirally.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Jeffrey Mfg. Co., Columbus, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

198 **Square Jaw.** Operated by jaws which intermesh squarely.

Abele, Chris., 537 W. 50th St., New York.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Lane & Bodley Co., Cincinnati, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

199 **Universal Joint.** Flexible couplings for transmitting rotary motion through an angle.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.

COUPLINGS, continued

200 **Vise.** See 201, Wedge Couplings.

Hill Clutch Co., Cleveland, O.
Sellers, Wm. & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

201 **Wedge.** Which clamp the shaft and are enclosed in a sleeve.

Stuart, R. J., New Hamburg, N. Y.

202 **DRIVING CHAINS.** For power transmission.

Federal Mfg. Co., American Trust Bldg., Cleveland, O. *See adv. page 126.*
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Morse Chain Co., Trumansburg, N. Y.
Whitney Mfg. Co., Hartford, Conn.

203 **FLY WHEELS.** Heavy wheels for steadying the motion of machinery.

Bates Machine Co., Joliet, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Chase Pulley Co., Providence, R. I.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda. Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Goodnow, L. H., Foundry Co., Fitchburg, Mass.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Howard Iron Works, Buffalo, N. Y.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Lehigh Foundry Co., Fullerton, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Poole Engineering & Machine Co., Baltimore, Md.
Quincy Engine Works, Quincy, Ill.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Stilwell-Bierce and Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

204 **FRAMES OR BOXES, WALL.** See 166, Wall Brackets.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda. Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastwood, Benj., Co., Paterson, N. J.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.

FRAMES OR BOXES, WALL, continued

Kilburn, Lincoln & Co., Fall River, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

205 GEARS. Toothed wheels for transmitting rotary motion.

Abele, Chris., 537 W. 50th St., New York.
Albro, Clem, Elevator Co., 7th & Glenwood Ave., Philda, Pa.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Arthur Co., 188 Front St., New York.
Aultman Co., Canton, O.
Bilgram Hugo, 440 No. 12th St., Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Boston Gear Works, Purchase & Pearl Sts., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Caldwell, H. W., & Son, Co., Chicago, Ill.
Chester Steel Castings Co., 407 Sansom St., Philadelphia, Pa.
Christiana Machine Co., Christiana, Pa.
Cleveland Gear Works, Cleveland, O.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Delaware Hard Fibre Co., Wilmington, Del.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Earle Gear & Machine Co., Oxford & Mascher Sts., Philda, Pa.
Fawcus Machine Co., Pittsburg, Pa.
Ganschow, William, 12 So. Clinton St., Chicago, Ill.
Gleason Works, Rochester, N. Y.
Grant Gear Works, 6 Portland St., Boston, Mass.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Hill Clutch Co., Cleveland, O.
Hinds, Thos., Malone, N. Y.
Horsburgh & Scott, Cleveland, O.
Howard Iron Works, Buffalo, N. Y.
Hunt, Rodney, Machine Co., Orange, Mass.
James & Foote, 58 So. Canal St., Chicago, Ill.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Krumberger & Vreeland, 33 Sullivan St., New York.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
Mansfield Engineering Co., Mansfield, O.
Medart Patent Pulley Co., St. Louis, Mo.
Messmer, Ferdinand, Mfg. Co., 2702 So. 7th St., St. Louis, Mo.
Mesta Machine Co., Pittsburg, Pa.

GEARS, continued

Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Morse, Williams & Co., Philadelphia, Pa.
Mundy, J. S., 22 Prospect St., Newark, N. J.
National Gear Wheel & Foundry Co., Allegheny, Pa.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
New Process Rawhide Co., Syracuse, N. Y.
Nuttall, R. D., Co., Pittsburg, Pa.
Philadelphia Gear Works, 7th & Cherry Sts., Philda, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Sawyer Gear Works, 227 St. Clair St., Cleveland, O.
Schofield Gear & Pulley Co., Providence, R. I.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Simonds Mfg. Co., Pittsburg, Pa.
Smith, Jas. Woolen Machinery Co., 411 Race St., Philda, Pa.
Smith S. Morgan Co., York, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Stow Flexible Shaft Co., 26th and Callowhill Sts., Philda, Pa.
Townsend Furnace & Machine Shop, Albany, N. Y.
Trebert, H. L. F., & Co., Rochester, N. Y.
Welch, T. F., & Co., 55 Sudbury St., Boston, Mass.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Willamette Iron & Steel Works, Portland, Oregon.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Windsor Locks Machine Co., Windsor Locks, Conn.
Wood's, T. B., Sons, Chambersburg, Pa.

206 **Worm Wheel.** For engagement with worms.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Jeffrey Mfg. Co., Columbus, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Krumberger & Vreeland, 33 Sullivan St., New York.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
National Gear Wheel & Foundry Co., Allegheny, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Townsend Furnace & Machine Shop, Albany, N. Y.

207 **HANGERS.** Frames containing bearings for shafting.

208 **Ball and Socket, Adjustable.** Shaft hangers that are self-adjusting.

Abele, Chris., 537 West 50th St., New York.
Bantam Mfg. Co., Bantam, Conn.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastwood, Benjamin, Co., Paterson, N. J.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.

HANGERS, BALL AND SOCKET, continued

Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons, Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philda, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Olney & Warrin, 36 Dey St., New York.
Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg, New York.
Seelye Mfg. Co., 118 South St., Boston, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Strait, H. N., Mfg. Co., Kansas City, Kan.
Townsend Furnace & Machine Shop, Albany, N. Y.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamette Iron & Steel Works, Portland, Oregon.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

209 **Bracket.** See 166, Wall Brackets.

210 **Drop.** Shaft hangers adapted to be fastened to the ceiling.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Diamond Flask & Clamp Co., Richmond, Ind.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Massillon, O.
Hill Clutch Co., Cleveland, O.
Howard Iron Works, Buffalo, N. Y.
Hunt, Rodney Machine Co., Orange, Mass.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons, Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*

HANGERS, DROP, continued

Robins Conveying Belt Co., Park Row Bldg., New York.
Seelye Mfg. Co., 118 South St., Boston, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
Standard Pressed Steel Co., 20th & Clearfield Sts, Philda, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Strait, H. N. Mfg. Co., Kansas City, Kan.
Townsend Furnace & Machine Shop, Albany, N. Y.
Valley Iron Works, Williamsport, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
White, John A., Co., Dover, N. H.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

211 **Head Shaft.** See 164, Pillow Blocks.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hoppen, J. E., Belleville, N. J.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Kilburn, Lincoln & Co., Fall River, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith James Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

212 **Post.** See 166, Wall Brackets.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Cleveland, O.
Hill Clutch Co., Cleveland, O.
Howard Iron Works, Buffalo, N. Y.
Hunt, Rodney, Machine Co., Orange, Mass.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.

HANGERS, POST, continued

Kelly Foundry & Machine Co., Goshen, Ind.
Kilburn, Lincoln & Co., Fall River, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddle Co., Charlotte, N. C.
Link-Belt Engineering Co., Nicetown, Philadelphia Pa.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Seelye Mfg. Co., 118 South St., Boston, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Machinery Co., 411 Race St., Philda, Pa.
Stilwell-Bierce and Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Valley Iron Works, Williamsport, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
White, John A., Co., Dover, N. H.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

213 **OILERS, LOOSE PULLEY, SHAFT, ETC.** For lubricating purposes.

Abele, Chris., 537 W. 50th St., New York.
Alden, R., & Sons, Wauhegan, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Graves, W. D., Browns Valley, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Robins Conveying Belt Co., Park Row Bldg., New York.
Scobee Loose Pulley Lubricator Co., Winchester, Ky.
Van Duzen, E. W., Co., Cincinnati, O.

214 **PULLEY BLOCKS.** See 236, Tackle Blocks.

215 **PULLEYS.** Wheels having flat or grooved gulls for transmitting power by belt or rope.

216 **Clamp Hub.** Having the hub clamped to the shaft by transverse bolts.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bates Machine Co., Joliet, Ill.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens' Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Howard Iron Works, Buffalo, N. Y.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Kilburn, Lincoln & Co., Fall River, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Medart Patent Pulley Co., St. Louis, Mo

PULLEYS, CLAMP HUB, continued

Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Pittsburg Pulley Co., Pittsburg, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

217 **Double Arm, Iron.** Having two sets of spokes or arms.

Abele, Chris., 537 West 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bates Machine Co., Joliet, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Christiana Machine Co., Christiana, Pa.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Pittsburg Pulley Co., Pittsburg, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

218 **Flange.** Having flanges at sides to keep belts from slipping off.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Chase Pulley Co., Providence, R. I.
Christiana Machine Co., Christiana, Pa.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Massillon, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.

PULLEYS, FLANGE, continued

Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St., & Lehigh Ave., Philadelphia, Pa.
Pittsburg Pulley Co., Pittsburg, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
White, John A., Co., Dover, N. H.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

219 **Fly Wheel.** With belt faces for belts.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bates Machine Co., Joliet, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Lane & Bodley Co., Cincinnati, O.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St., & Lehigh Ave., Philadelphia, Pa.
Pittsburg Pulley Co., Pittsburg, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Smith James Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

220 **Friction Clutch.** Having friction clutches so that they may be thrown into action or not as required.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Eastern Machinery Co., New Haven, Conn.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Hess-Snyder Co., Massillon, O.
Hill Clutch Co., Cleveland, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, Jas., Machine Co., North Adams, Mass.
Jacobson Machine Mfg. Co., Warren, Pa.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Mason, Volney, W., & Co., Providence, R. I.

PULLEYS, FRICTION CLUTCH, continued

Medart Patent Pulley Co., St. Louis, Mo.
McMurray, C. F., Co., Troy, N. Y.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave, Minneapolis, Minn.
Moore & White Co., 15th St. and Lehigh Ave., Philadelphia, Pa.
Oesterlein Mche. Co., Cincinnati, O.
Poole Engineering & Machine Co., Baltimore, Md.
Reeves Pulley Co., Columbus, Ind.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Sinclair-Scott Co., Baltimore, Md.
Smith, James, Woolen Machinery Co., 411 Race St., Philda.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Taper Sleeve Pulley Works, Erie, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Willamette Iron & Steel Works, Portland, Ore.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wilmarth & Morman Co., Grand Rapids, Mich.
Wood's, T. B., Sons, Chambersburg, Pa.

221 **Gallows or Guide.** Loose pulleys mounted in movable frames to guide and tighten belts.

Abele, Chris., 537 W. 50th St., New York.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith James Woolen Mchy Co., 411 Race St., Philadelphia, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

222 **Grooved.** For carrying wire or fibre ropes.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bates Machine Co., Joliet, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hill Clutch Co., Cleveland, O.
Howard Iron Works, Buffalo, N. Y.
Hunt, Rodney, Machine Co., Orange, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa. ffl
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Kilburn, Lincoln & Co., Fall River, Mass.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Perkins, B. F., & Son, Holyoke, Mass.

PULLEYS, GROOVED, continued

Poole Engineering & Machine Co., Baltimore, Md.
Quincy Engine Works, Quincy, Ill.
Reeves Pulley Co., Columbus, Ind.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Wood's, T. B., Sons, Chambersburg, Pa.

222A **Paper.**

Rockwood Mfg. Co., Indianapolis, Ind.

223 **Pressed Steel.** Made of pressed steel for the sake of tightness and strength.

American Pulley Co., 29th & Bristol Sts., Philadelphia, Pa.
Oneida Steel Pulley Co., Oneida, N. Y.

224 **Single Arm or Plain.** The standard form of belt pulleys having a single set of spokes or arms.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Christiana Machine Co., Christiana, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Hess-Snyder Co., Massillon, O.
Hinds, Thos., Malone, N. Y.
Howard Iron Works, Buffalo, N. Y.
Hunt, Rodney, Machine Co., Orange, Mass.
Hunter, James, Machine Co., North Adams, Mass.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Pittsburg Pulley Co., Pittsburg, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
White, John A., Co., Dover, N. H.
Windsor Locks Machine Co., Windsor Locks, Conn.
Wood's, T. B., Sons, Chambersburg, Pa.

225 **Split.** Made in halves so that they may be erected on a shaft by separating the parts and clamping them in position.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Chase Pulley Co., Providence, R. I.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.

PULLEYS, SPLIT, continued

Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Eastwood, Benjamin, Co., Paterson, N. J.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Massillon, O.
Howard Iron Works, Buffalo, N. Y.
Hunt, Rodney, Machine Co., Orange, Mass .
Hunter, Jas., Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Perkins, B. F., & Son, Holyoke, Mass.
Pittsburg Pulley Co., Pittsburg, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Schofield Gear & Pulley Co., Providence, R. I.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
White, John A., Co., Dover, N . H .
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

226 **Tight and Loose.** By which the machine may be readily started and stopped.

Abele, Chris., 537 W. 50th St., New York.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Hess-Snyder Co., Massillon, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, James, Machine Co., North Adams, Mass.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Link-Belt Machinery Co., 39th St., & Stewart Ave., Chicago, Ill.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.

PULLEYS, TIGHT AND LOOSE, continued

Oneida Steel Pulley Co., Oneida, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Reeves Pulley Co., Columbus, Ind.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

227 **Wood Split.** Wood pulleys made in halves.

Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Keasey Pulley Co., Toledo, O.
Carey, W. W., Lowell, Mass.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Oneida Steel Pulley Co., Oneida, N. Y.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.
Strait, H. N., Mfg. Co., Kansas City, Kans.
Washington Pulley Co., Ballard, Wash.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wing, J. T., & Co., Detroit, Mich.

228 **ROPE.** For power transmission.

American Mfg. Co., 63 Wall St., New York.
Broderick & Bascom Rope Co., St. Louis, Mo.
Carpenter, Geo. B., & Co., 208 S. Water St., Chicago, Ill.
Columbian Cordage Co., Auburn, N. Y.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Durable Wire Rope Co., 28-30 Atlantic Ave., Boston, Mass.
Greenwald, I. & E., Co., Cincinnati, O.
Hunt, C. W., Co., 45 Broadway, New York.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Leschen, A., & Sons Rope Co., St. Louis, Mo.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Macomber & Whyte Co., 21 S. Canal St., Chicago, Ill.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Samson Cordage Works, 115 Congress St., Boston, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Wood's, T. B., Sons, Chambersburg, Pa.

229 **SHAFTING.** Steel or iron bars, usually cylindrical for transmitting rotary motion.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Aultman Co., Canton, O.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Capital City Machine Works, Columbus, O.
Christiana Machine Co., Christiana, Pa.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Cumberland Steel Co., Cumberland, Md.

SHAFTING, continued

Eastwood, Benj., Co., Paterson, N. J.
Fairmount Machine Co., 2106 Wood St., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Hill Clutch Co., Cleveland, O.
Hinds, Thos., Malone, N. Y.
Howard Iron Works, Buffalo, N. Y.
Hunter, Jas., Machine Co., North Adams, Mass.
Humphrey Machine Co., Keene, N. H.
Jeffrey Mfg. Co., Columbus, O.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones, W. A., Foundry & Machine Co., 142 W. North Ave., Chicago, Ill.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Liddell Co., Charlotte, N. C.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Pardee, C., Works, Perth Amboy, N. J.
Perkins, B. F., & Son, Holyoke, Mass.
Pittsburg Steel Shafting Co., Rankin Sta., Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Ross, Josiah, Buffalo, N. Y.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, S. Morgan, York, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Strait, N. H., Mfg. Co., Kansas City, Kans.
Townsend Furnace & Machine Shop, Albany, N. Y.
Valley Iron Works, Williamsport, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Willamette Iron & Steel Works, Portland, Oregon.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Windsor Locks Machine Co., Windsor Locks, Conn.
Wood's, T. B., Sons, Chambersburg, Pa.

230 **Flexible.** Pliable connections for transmitting rotary motion from one shaft to another.

Chicago Flexible Shaft Co., La Salle & Ontario Sts., Chicago, Ill. *See adv. page 125.*
Coates Clipper Mfg. Co., Worcester, Mass.
Fancher Machine Co., Baldwinsville, N. Y.
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philadelphia.
Stow Mfg. Co., Binghamton, N. Y.

231 **SHEAVES, ROPE.** See 222, Grooved Pulleys.

232 **SHIFTER FORKS OR DEVICES.** Arms engaging the sides of a belt, by which it may be moved sideways from tight to loose pulleys or vice versa.

Abele, Chris., 537 W. 50th St., New York.
Aultman Co., Canton, O.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.

SHIFTER FORKS OR DEVICES, continued

Falls Rivet & Machine Co., Cuyahoga Falls, O.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
McMurray, C. F., Co., Troy, N. Y.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Wood's, T. B., Sons, Chambersburg, Pa.

233 **SPEED TRANSMISSION DEVICES.** For regulating speed.

Abele, Chris., 537 W. 50th St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda, Pa.
Evans Friction Cone Co., 85 Water St., Boston, Mass.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
National Machine Tool Co., Cincinnati, O.
Reeves Pulley Co., Columbus, Ind.

234 **STANDS, FLOOR.** Shaft bearings which are fastened to the floor.

Abele, Chris., 537 W. 50th St., New York.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda.
Dodge Mfg. Co., Mishawaka, Ind.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E. Co., 720 E. Pearl St., Cincinnati, O. *See adv. page 106.*
Hill Clutch Co., Cleveland, O.
Hunter, Jas., Machine Co., North Adams, Mass.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Lane & Bodley Co., Cincinnati, O.
McMurray, C. F., Co., Troy, N. Y.
Medart Patent Pulley Co., St. Louis, Mo.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Perkins, B. F., & Son, Holyoke, Mass.
Poole Engineering & Machine Co., Baltimore, Md.
Robins Conveying Belt Co., Park Row Bldg., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, Jas., Woolen Machinery Co., 411 Race St., Philadelphia.
Standard Pressed Steel Co., 20th & Clearfield Sts., Philda, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Townsend Furnace & Machine Shop, Albany, N. Y.
Valley Iron Works, Williamsport, Pa.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
White, John A., Co., Dover, N. H.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Woods, T. B., Sons, Chambersburg, Pa.

STANDS, continued

235 **Mule.** Pulley stands for supporting guide pulleys.

Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Goldens Foundry & Machine Co., Columbus, Ga.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Howard Iron Works, Buffalo, N. Y.
Hunter, Jas., Machine Co., North Adams, Mass.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Lane & Bodley Co., Cincinnati, O.
Medart Pulley Co., St. Louis, Mo.
McMurray, C. F., Co., Troy, N. Y.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Poole Engineering & Machine Co., Baltimore, Md.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Smith, James, Woolen Mch'y Co., 411 Race St., Philda, Pa.
Valley Iron Works, Williamsport, Pa.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

236 **TACKLE BLOCKS.** See Finding List.

237 **TAKE-UPS.** For use where it is necessary to take up slack in belts, as in elevators.

Brown, A. & F., Co., 25 Dey St., New York.
Diamond Iron Works, Minneapolis, Minn.
Dodge Mfg. Co., Mishawaka, Ind.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Klein, Chas. C., Marshall & Cambria Sts., Philadelphia, Pa.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Perkins, B. F., & Son, Holyoke, Mass.
Robins Conveying Belt Co., Park Row Bldg., New York.
Valley Iron Works, Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

238 **TRIPPERS, BELT CONVEYOR.** For dumping the materials carried on conveyors.

Abele, Chris., 537 W. 50th St., New York.
Dodge Mfg. Co., Mishawaka, Ind.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Robins Conveying Belt Co., Park Row Bldg., New York.

239 **WHEELS, ROPE TRANSMISSION.** See 222, Grooved Pulleys.

Aultman Co., Canton, O.
Brown, A. & F., Co., 25 Dey St., New York.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda.
Falls Rivet & Machine Co., Cuyahoga Falls, O.
Howard Iron Works, Buffalo, N. Y.

WHEELS, ROPE TRANSMISSION, continued

Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
New Jersey Foundry & Machine Co., 9 Murray St., New York. New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Valley Iron Works, Williamsport, Pa.
Wood's, T. B., Sons, Chambersburg, Pa.

240 **Sprocket.** Toothed wheels for chain driving.
Aultman Co., Canton, O.

Brown, A. & F., Co., 25 Dey St., New York.
Buhl Malleable Co., Adair & Wight Sts., Detroit, Mich.
Bullock, C. K., 1361 Ridge Ave., Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Jeffrey Mfg. Co., Columbus, O.
Lane & Bodley Co., Cincinnati, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Valley Iron Works, Williamsport, Pa.
Williamsport Clutch & Pulley Co., Williamsport, Pa.

241 **WINDING DRUMS.** Grooved drums carrying ropes and used for hoisting purposes.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Brown, A. & F., Co., 25 Dey St., New York.
Eastern Machinery Co., New Haven, Conn.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Kaestner, Chas., & Co., 241 So. Jefferson St., Chicago, Ill.
Lane & Bodley Co., Cincinnati, O.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
New Jersey Foundry & Machine Co., 9 Murray St., New York.

---

242 PUMPING APPARATUS.

243 **AIR COMPRESSORS.** For compressing air, gases, etc.; used for caissons, artesian well works, mines, compression tanks, air brakes, breweries, and for power where steam is not available.

Advance Pump & Compressor Co., Battle Creek, Mich.
American Steam Pump Co., Battle Creek, Mich.
American Air Compressor Works, 26 Cortlandt St., New York.
American Water Motor Co., Columbus, O.
American Well Works, Aurora, Ill.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Baird Machinery Co., Pittsburg, Pa.

AIR COMPRESSORS, continued

Barr Pump Co., Germantown, Philadelphia, Pa.
Blaisdell Machinery Co., Bradford, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Blanchard Machine Co., Boston, Mass.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Clark Novelty Co., Rochester, N. Y.
Clayton Air Compressor Works, 114 Liberty St., New York.
Cleveland Faucet Co., 15 Frankfort St., Cleveland, O.
Cleveland Pneumatic Tool Co., Cleveland, Ohio.
Crowell, Gilmer, 294 Graham St., Brooklyn, N. Y.
Curtis & Co. Mfg. Co., St. Louis, Mo.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. and Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Doble Abner Co., Howard & Fremont Sts., San Francisco, Cal.
Fairbanks Co., Broome & Elm Sts., New York.
Douglas, W. & B., Middletown, Conn.
Fisher, A. J., 50 So. Clinton St., Chicago, Ill.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Gardner Governor Co., Quincy, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Grant Iron Works, Mahanoy City, Pa.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hardie-Tynes Foundry & Machine Co., Birmingham, Ala.
Hall Steam Pump Co., Allegheny, Pa.
Herron & Bury Mfg. Co., Erie, Pa.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.
Johnson Service Co., Milwaukee, Wis.
Imperial Engine Co., Painted Post, N. Y.
Knapp Mfg. Co., 24 Frankfort St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Lambert Hoisting Engine Co., Newark, N. J.
Lane & Bodley Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
McGowan, John H., Co., Cincinnati, O.
McKiernan Drill Co., 170 Broadway, New York.
Murray Iron Works Co., Burlington, Ia.
National Foundry & Machine Co., Louisville, Ky.
New York Air Brake Co., 66 Broadway, New York.
Norwalk Iron Works, South Norwalk, Conn. *See adv. page 116.*
Pedrick & Ayer Co., Plainfield, N. J.
Pulsometer Steam Pump Co., 135 Greenwich St., New York. *See adv. page 119.*
Rand Drill Co., 128 Broadway, New York. *See adv. page 122.*
Rarig Engineering Co., Columbus, O.
Reliance Machine & Tool Works, 3323 Franklin Ave., St. Louis.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Snider-Hughes Co., Cleveland, O.
Southern Engine & Boiler Works, Jackson, Tenn.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Springfield Elevator & Pump Co., Springfield, Mass.
Steeger, Henry, 143 E. 31st St., New York.
Stickney, Chas. A., & Co., St. Paul, Minn.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.

AIR COMPRESSORS, continued

Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Union Iron Works, San Francisco, Cal.
Union Steam Pump Co., Battle Creek, Mich.
Warren Steam Pump Co., Warren, Mass.
Weber Gas and Gasoline Engine Co., Kansas City, Mo.
Westinghouse Air Brake Co., Pittsburg, Pa.
Wilson-Snyder Mfg. Co., Ross and Water Sts., Pittsburg, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.

244 **PUMPING ENGINES.**

Barr Pump Co., Germantown, Philadelphia, Pa.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Deming Co., Salem, O.
Fairbanks, Morse Co., 172 Franklin St., Chicago, Ill.
Filler & Stowell Co., Ltd., Milwaukee, Wis.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Heisler Pumping Engine Co., Erie, Pa.
Holly Mfg. Co., Lockport, N. Y.
Mietz, August, 128 Mott St., New York.
Rarig Engineering Co., Columbus, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Weimer Machine Works Co., Lebanon, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

245 **Hot Air.**

American Machine Co., Wilmington, Del.
Rider-Ericcson Engine Co., 35 Warren St., New York.

---

246 PUMPS.

247 **ACID.** See 299, Power Pumps; also 304, Steam Pumps.

248 **ADMIRALTY.** See 288, Marine Pumps.

249 **AEROPHER.** For vaporizing the atmosphere in cotton and woolen mills.

Blake, Geo., F., Mfg. Co., 114 Liberty St., New York.
Deane Steam Pump Co., Holyoke, Mass.
Knowles Steam Pump Works, 114 Liberty St., New York.

250 **AIR.** See also 299, Power Pumps; and 304, Steam Pumps.

American Steam Pump Co., Battle Creek, Mich.
Barr Pump Co., Germantown, Philadelphia, Pa.
Clayton Air Compressor Works, 114 Liberty St., New York.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Deane Steam Pump Co., Holyoke, Mass.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Gould & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.

AIR PUMPS, continued

McKiernan Drill Co., 170 B'way, New York.
Cameron, A. S., Steam Pump Works, 433 East 23d St., N. Y.
Rand Drill Co., 128 Broadway, New York.
Perkes, Charles, 627 Arch St., Philadelphia, Pa.
Morse, Andrew J., & Son, 138 Congress St., Boston, Mass.
Reliance Machine & Tool Works, 3323 Franklin Ave., St. Louis, Mo.
Wheeler Condenser & Engineering Co., 120 Liberty St., New York.

251 **AMMONIA.** For pumping ammonia gas; used in the manufacture of ice.

American Steam Pump Co., Battle Creek, Mich.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Davidson, M. T., 43-45 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. and Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Frick Co., Waynesboro, Pa.
Gardner Governor Co., Quincy, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y.
Guild & Garrison, 457 Kent Avenue, Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Murray Iron Works Co., Burlington, Ia.
National Fdry. & Machine Co., Louisville, Ky.
Pulling, James G., & Co., Columbus, O.
Pulsometer Steam Pump Co., 135 Greenwich St., New York.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Springfield Elevator & Pump Co., Springfield, Mass.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Worthington, Henry R., 114 Liberty St., New York.

252 **ARTESIAN AND DEEP WELL.**

American Steam Pump Co., Battle Creek, Mich.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Mietz, August, 128 Mott St., New York.
American Steam Pump Co., Battle Creek, Mich.
Cook, A. D., Lawrenceburg, Ind.
Cameron, A. S., Steam Pump Works, 433 East 23d St., N. Y.
Deane Steam Pump Co., Holyoke, Mass.
Darling Pump and Mfg. Co., Williamsport, Pa.
Deming Co., Salem, O.
Downie Pump Co., Downieville, Pa.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Knowles Steam Pump Works, 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.

ARTESIAN PUMPS, continued

Myers, F. E., Co., Ashland, O.
Pierce Well Engineering & Supply Co., 136 Liberty St., N. Y.
Pulling, Jas. G., & Co., Columbus, O.
Reliance Machine & Tool Works, 3323 Franklin Ave., St. Louis, Mo.
Union Steam Pump Co., Battle Creek, Mich.

253 **AUTOMATIC PUMPS AND RECEIVERS.** For returning the condensation from heating and drying systems to boilers.

Albany Steam Trap Co., Albany, N. Y.
American Steam Pump Co., Battle Creek, Mich.
Blake, Geo. F., Pump Works, 114 Liberty St., New York.
Barr Pump Co., Germantown, Philadelphia, Pa.
Blakeslee Manufacturing Co., Du Quoin, Ill.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Burdett-Rowntree Mfg. Co., 85-87 W. Jackson Blvd., Chicago.
Cameron, A. S., Steam Pump Works, 433 East 23d St., N. Y.
Canton Pump Co., Canton, O.
Cleveland Faucet Co., 15 Frankfort St., Cleveland, O.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. and Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Gardner Governor Co., Quincy, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
Pulling, James G., & Co., Columbus, O.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Union Steam Pump Co., Battle Creek, Mich.
Warren Steam Pump Co., Warren, Mass.
Wilson-Snyder Mfg. Co., Ross & Water Sts., Pittsburg, Pa.
Worthington, Henry R., 114 Liberty St., New York.

254 **BALLAST.** See 288, Marine Pumps.

255 **BOILER FEED.** See 299, Power Pumps; also 304, Steam Pumps.

256 **BREWERY.** See 304, Steam Pumps.

257 **CENTRIFUGAL.** Which operate by the centrifugal action of revolving blades in a case.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Well Works, Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Beloit Iron Works, Beloit, Wis.
Black-Clawson Co., Hamilton, O.

CENTRIFUGAL PUMPS, continued

Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.
Brownville Iron Works, Brownville, N. Y.
Bucyrus Co., South Milwaukee, Wis.
Craft, Jesse, 260 Front St., New York.
Cross, E. M., Berlin, N. H.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Douglas, W. & B., Middletown, Conn.
Downington Mfg. Co., Ltd., East Downington, Pa.
Edwards, Joseph, & Co., 412 Water St., New York.
Erie Pump & Engine Co., Erie, Pa.
Fairbanks Co., Broome and Elm Sts., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Freeman Foundry & Machine Works, Joplin, Mo.
Frenier, J. H., Rutland, Vt.
Hooker Steam Pump Co., St. Louis, Mo.
Howell, R. R., & Co., Minneapolis, Minn.
Humphryes Mfg. Co., Mansfield, O.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.
Jackson, Byron, San Francisco, Cal.
Kansas City Hay Press Co., Kansas City, Mo.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Krogh Mfg. Co., San Francisco, Cal.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Lake City Engineering Co., Erie, Pa.
Lance, Geo. A., Watertown, N. Y.
Lawrence Machine Co., Lawrence, Mass.
Maslin, John, & Son, 163 First St., Jersey City, N. J.
McGowan, John H., Co., Cincinnati, O.
Mietz, August, 128 Mott St., New York.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Morris Machine Works, Baldwinsville, N. Y.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Nevin & Wetmore Iron Works, Lowville, N. Y.
Pulling, James G., & Co., Columbus, O.
Pusey & Jones Co., Wilmington, Del.
Quimby, Wm. E., Inc., 86 Liberty St., New York.
Risdon Iron & Locomotive Works, San Francisco, Cal.
San Francisco Tool Works, San Francisco, Cal.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Trevor Mfg. Co., Lockport, N. Y.
Union Mfg. Co., New Britain, Conn.
United States Pump & Supply Co., Toledo, O.
Van Wie, Irvin, Syracuse, N. Y.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Wilbraham-Green Blower Co., 2518 Frankford Ave., Philda.
Williams, White & Co., Moline, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Woodlin & Little, 312 Market St., San Francisco, Cal.
Worthington, Henry R., 114 Liberty St., New York.

258 **High Duty.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.

CENTRIFUGAL PUMPS, HIGH DUTY, continued

Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Jackson, Byron, San Francisco, Cal.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Lawrence Machine Co., Lawrence, Mass.
Morris Machine Works, Baldwinsville, N. Y.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

259 **Horizontal.**

Carlin's, Thos., Sons Co., Allegheny, Pa.
Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Erie Pump & Engine Co., Erie, Pa.
Eureka Bark Mill Co., Lancaster, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Jackson, Byron, San Francisco, Cal.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Lawrence Machine Co., Lawrence, Mass.
Morris Machine Works, Baldwinsville, N. Y.
McGowan, John H., Co., Cincinnati, O.
Mietz, August, 128 Mott St., New York.
Pulling, James G., & Co., Columbus, O.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
United States Pump & Supply Co., Toledo, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

260 **Phosphate Dredging.**

Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Erie Pump & Engine Co., Erie, Pa.
Kansas City Hay Press Co., Kansas City, Mo.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Morris Machine Works, Baldwinsville, N. Y.
Van Wie, Irvin, Syracuse, N. Y.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.

261 **Vertical.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Douglas, W. & B., Middletown, Conn.
Erie Pump & Engine Co., Erie, Pa.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Jackson, Byron, San Francisco, Cal.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Lawrence Machine Co., Lawrence, Mass.
McGowan, John H., Co., Cincinnati, O.
Mietz, August, 128 Mott St., New York.
Morris Machine Works, Baldwinsville, N. Y.

CENTRIFUGAL PUMPS, VERTICAL, continued

Pulling, James G., & Co., Columbus, O.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
United States Pump & Supply Co., Toledo, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

262 **CHAIN.** See 278, Hand Pumps.

263 **CIRCULATING.** See 257, Centrifugal Pumps; 299, Power Pumps; also 304, Steam Pumps.

264 **CISTERN.** See 278, Hand Pumps.

265 **CONDENSATION.** See 304, Steam Pumps.

266 **CREAMERY.** See 304, Steam Pumps.

267 **DIRECT ACTING.** See 299, Power Pumps; also 304, Steam Pumps.

268 **DISTILLERY.** See 304, Steam Pumps.

269 **DREDGING.** See 299, Power Pumps; also 304, Steam Pumps.

270 **DRIP.** See 304, Steam Pumps.

271 **ELECTRIC.** Driven by belt, or directly connected to an electric motor. See also 299, Power Pumps.

Allentown Rolling Mills, Allentown, Pa.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Fire Engine Co., Seneca Falls, N. Y.
Bernard, E. G., Co., Troy, N. Y.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Davis, I. B., & Son, Hartford, Conn.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Dow, Geo. E., Pumping Engine Co., 179 1st St., San Francisco, Cal.
Erwin & Co., 35 N. Canal St., Chicago, Ill.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
General Electric Co., Schenectady, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Holly Mfg. Co., Lockport, N. Y.
Jackson, Byron, San Francisco, Cal.
Jeanesville Iron Works Co., Jeanesville, Pa.
Jeffrey Mfg. Co., Columbus, O.
Kelley, Benj. F., & Son, 91 Liberty St., New York.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Lawrence Machine Co., Lawrence, Mass.
Lucas, C. O., & Co., Greenville, O.
McGowan, J. H., Co., Cincinnati, O.
New York Air Brake Co., 66 Broadway, New York.
Pulling, James G., & Co., Columbus, O.

ELECTRIC PUMPS, continued

Quimby, Wm. E., Inc., 86 Liberty St., New York.
Quincy Engine Works, Quincy, Ill.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Stearns-Roger Mfg. Co., Denver, Col.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Taber Pump Co., Buffalo, N. Y.
Van Wie, Irvin, Syracuse, N. Y.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Worthington, Henry R., 114 Liberty St., New York.

272 **ELEVATOR.** See also 304, Steam Pumps.

American Steam Pump Co., Battle Creek, Mich.
Barr Pump Co., Germantown, Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Burdett-Rowntree Mfg. Co., 85-87 W. Jackson Blvd., Chicago.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Canton Pump Co., Canton, O.
Davidson, M. T., 45-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Fort Scott Foundry & Machine Co., Fort Scott, Kan.
Gardner Governor Co., Quincy, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Grant Iron Works, Mahanoy City, Pa.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Jeanesville Iron Works Co., Jeanesville, Pa.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Lucas, C. O., & Co., Greenville, O.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
Pulling, James G., & Co., Columbus, O.
Quimby, Wm. E., Inc., 86 Liberty St., New York.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Springfield Elevator & Pump Co., Springfield, Mass.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Union Steam Pump Co., Battle Creek, Mich.
Van Wie, Irvin, Syracuse, N. Y.
Warren Steam Pump Co., Warren, Mass.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Worthington, Henry R., 114 Liberty St., New York.

273 **FILTER PRESS.** See 304, Steam Pumps.

274 **FIRE.** See 299, Power Pumps; also 304, Steam Pumps.

275 **FORCE.** See 299, Power Pumps.

276 **GEARED.** See 299, Power Pumps.

277 **GROUTING.** See 278, Hand Pumps.

278 **HAND.** For general purposes where power is not available.

Althouse-Wheeler Co., Waupun, Wis.
American Pump & Supply Co., Toledo, O.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Barnes Mfg. Co., Mansfield, O.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Biggs, B. F., Pump Co., Lafayette, Ind.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Boston & Lockport Block Co., 160 Commercial St., Boston.
Buescher Mfg. Co., Elkhart, Ind.
Buhl Malleable Co., Adair & Wight Sts., Detroit, Mich.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Canton Pump Co., Canton, O.
Cardwell Machine Co., Richmond, Va.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Clark Bros., Belmont, N. Y.
Clayton Air Compressor Works, 114 Liberty St., New York.
Cleveland Faucet Co., 15 Frankfort St., Cleveland, O.
Cleveland Galvanizing Works, Cleveland, O.
Columbiana Pump Co., Columbiana, O.
Comstock & Coonse Co., Indianapolis, Ind.
Darling Pump & Mfg. Co., Williamsport, Pa.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Dempster Mill Mfg. Co., Beatrice, Neb.
Diamond Drill & Machine Co., Birdsboro, Pa.
Douglas, W. & B., Middletown, Conn.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Ehrsam, J. B., & Sons Mfg. Co., Enterprise, Kan.
Erwin & Co., 35 N. Canal St., Chicago, Ill.
Flint & Walling Mfg. Co., Kendallville, Ind.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Grant Iron Works, Mahanoy City, Pa.
Hall Steam Pump Co., Allegheny, Pa.
Haydenville Co., Haydenville, Mass.
Hayes Pump & Planter Co., Galva, Ill.
Hess-Snyder Co., Massillon, O.
Hill Machine Co., Anderson, Ind.
Hoes, Robert, Malden Bridge, N. Y.
Hoile Mfg. Co., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Humphryes Mfg. Co., Mansfield, O.
Hurst, H. L., Mfg. & Supply Co., Canton, O.
I. X. L. & Goshen Pump Co., Goshen, Ind.
Illinois Malleable Iron Co., 30 W. Monroe St., Chicago, Ill.
Jackson, Byron, San Francisco, Cal.

HAND PUMPS, continued

Kingsford Foundry & Machine Works, Oswego, N. Y.
Knapp Mfg. Co., 24 Frankfort St., New York.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Lake City Engineering Co., Erie, Pa.
McDonald, A. Y., & Morrison Mfg. Co., Dubuque, Ia.
McGowan, John H., Co., Cincinnati, O.
Mast Foos Co., Springfield, O.
Maud S. Windmill & Pump Co., Lansing, Mich.
Moline Pump Co., Moline, Ill.
Myers, F. E., & Bro., Ashland, O.
National Foundry & Machine Co., Louisville, Ky.
Perkes, Chas., 627 Arch St., Philadelphia, Pa.
Perkins Wind Mill & Axe Co., Mishawaka, Ind.
Pierce Well Engineering & Supply Co., 136 Liberty St., N. Y.
Porter, J. E., Co., Ottawa, Ill.
Red Cross Mfg. Co., Bluffton, Ind.
Red Jacket Mfg. Co., Davenport, Ia.
Reynolds, M., Plumbers' Supply Co., 25 Centre St., New York.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.
Sands, Alfred B., & Son, 134 Beekman St., New York.
Springfield Elevator & Pump Co., Springfield, Mass.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Taber Pump Co., Buffalo, N. Y.
Temple Pump Co., 16-28 W. 15th St., Chicago, Ill.
Thomas Mfg. Co., Springfield, O.
Trahern Pump Co., Rockford, Ill.
Union Mfg. Co., New Britain, Conn.
United States Pump & Supply Co., Toledo, O.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Van Duzen, E. W., Co., Cincinnati, O.
Van Wie, Irvin, Syracuse, N. Y.
Warren Steam Pump Co., Warren, Mass.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Weiman Machine Works, Columbus, O.
Wilder, Sydney & Co., Holliston, Mass.
Wilson-Snyder Mfg. Co., Ross & Water Sts., Pittsburg, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.
Woodmanse & Hewitt Mfg. Co., Freeport, Ill.
Wyckoff, A., & Son, Elmira, N. Y.
Zimmerman Mfg. Co., Auburn, Ind.

279 **Beer and Ale.** For use in raising liquors; operated by hand.

Bishop & Babcock Co., Hamilton & Kirtland Sts., Cleveland, O.
Chambers & Ainslie, Newark, N. J.
Cleveland Faucet Co., 15 Frankfort St., Cleveland, O.
Cox Brass Mfg. Co., Ltd., Albany, N. Y.
Deane Steam Pump Co., Holyoke, Mass.
Douglas, W. & B., Middletown, Conn.
Goulds Mfg. Co., Seneca Falls, N. Y.
Grant Iron Works, Mahanoy City, Pa.
Haydenville Co., Haydenville, Mass.
Hooker Steam Pump Co., St. Louis, Mo.
Humphryes Mfg. Co., Mansfield, O.
Hydro-Pneumatic Pump Co., 101 Walker St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.

HAND PUMPS, BEER AND ALE, continued

Liquid Carbonic Co., Michigan & Wells Sts., Chicago, Ill.
Peck Bros. & Co., New Haven, Conn.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Snow Steam Pump Works, 114 Liberty St., New York.
Strater, Herman, & Sons, 74 Sudbury St., Boston, Mass.
Taber Pump Co., Buffalo, N. Y.
Toombs, Samuel, 10 Peck St., New York.
Union Mfg. Co., New Britain, Conn.
Union Steam Pump Co., Battle Creek, Mich.
Weiman Machine Works, Columbus, O.
Woodin & Little, 312 Market St., San Francisco, Cal.

280 **Diaphragm.** Used by contractors in general construction work and operated by hand.

Barnes Mfg. Co., Mansfield, O.
Boston & Lockport Block Co., 160 Commercial St., Boston.
Douglas, W. & B., Middletown, Conn.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Union Hardware Co., Torrington, Conn.

281 **Painters' Oil.**

Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Reilley Bros., 322 W. 41st St., New York.

282 **Porcelain Lined.**
Barnes Mfg. Co., Mansfield, O.
Bushnell Pump Co., Bushnell, Ill.
Douglas, W. & B., Middletown, Conn.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Humphryes Mfg. Co., Mansfield, O.
I. X. L. & Goshen Pump Co., Goshen, Ind.
Morris Machine Works, Baldwinsville, N. Y.
Temple Pump Co., 16-28 W. 15th Pl., Chicago, Ill.
U. S. Wind Engine & Pump Co., Batavia, Ill.

283 **Siphon.** See also 57, Ejectors.

Barnes Mfg. Co., Mansfield, O.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Fowler, Frank, Louisville, Ky.
Humphryes Mfg. Co., Mansfield, O.
Lang's, John S., Son & Co., 4 Fletcher St., New York.
Myers, F. E., & Bro., Ashland, O.
Nason Mfg. Co., 71 Fulton St., New York.
Van Duzen, E. W., Co., Cincinnati, O.

284 **Wooden.** For use on farms.

Biggs, B. F., Pump Co., Lafayette, Ind.
Cedar Rapids Pump Co., Cedar Rapids, Ia.
Decatur Lumber & Mfg. Co., Decatur, Ill.
Dempster Mill Mfg. Co., Beatrice, Neb.
Howard & Jennings, Syracuse, N. Y.
I. X. L. & Goshen Pump Co., Goshen, Ind.

HAND PUMPS, WOODEN, continued

McDonald, A. Y., & Morrison Mfg. Co., Dubuque, Ia.
Moline Pump Co., Moline, Ill.
Nelson, N. O., Mfg. Co., 8th & St. Charles Sts., St. Louis, Mo.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.
Temple Pump Co., 16-28 W. 15th Pl., Chicago, Ill.
Trahern Pump Co., Rockford, Ill.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Woodin & Little, 312 Market St., San Francisco, Cal.

285 **HORIZONTAL.** See 278, Hand Pumps; also 299, Power Pumps; also 304, Steam Pumps.

286 **HOUSE.** See 278, Hand Pumps.

287 **MANHOLE.** See 280, Diaphragm Pumps.

288 **MARINE.** For use on steamships, etc.

Advance Pump & Compressor Co., Battle Creek, Mich.
American Steam Pump Co., Battle Creek, Mich.
Barnes Mfg. Co., Mansfield, O.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Blakeslee Mfg. Co., Du Quoin, Ill.
Boston & Lockport Block Co., 160 Commercial St., Boston.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Canton Pump Co., Canton, O.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Erie Pump & Engine Co., Erie, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Humphryes Mfg. Co., Mansfield, O.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Knowles Steam Pump Works, 114 Liberty St., New York.
La France Fire Engine Co., Elmira, N. Y.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
Morris Machine Works, Baldwinsville, N. Y.
Myers, F. E., & Bro., Ashland, O.
Russell, Albert & Sons, Newburyport, Mass.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Union Mfg. Co., New Britain, Conn.
Union Steam Pump Co., Battle Creek, Mich.
Van Wie, Irvin, Syracuse, N. Y.

MARINE PUMPS, continued

Wilson-Snyder Mfg. Co., Ross & Water Sts., Pittsburg, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.
Worthington, Henry R., 114 Liberty St., New York.

289 **Bilge.**

Abendroth & Root Mfg. Co., 99 John St., New York.
Barnes Mfg. Co., Mansfield, O.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Blakeslee Mfg. Co., Du Quoin, Ill.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Detroit Pump Co., Detroit, Mich.
Douglas, W. & B., Middletown, Conn.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Flint & Walling Mfg. Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hayden & Derby Mfg. Co., 89 Liberty St., New York.
Haydenville Co., Haydenville, Mass.
Hooker Steam Pump Co., St. Louis, Mo.
Humphryes Mfg. Co., Mansfield, O.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Manistee Iron Works, Manistee, Mich.
Maslin, John, & Son, 163 First St., Jersey City, N. J.
National Foundry & Machine Co., Louisville, Ky.
Pulling, James G., & Co., Columbus, O.
Pulsometer Steam Pump Co., 135 Greenwich St., New York.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Sands, Alfred B., & Son, 134 Beekman St., New York.
Snow Steam Pump Works, 114 Liberty St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Van Duzen, E. W., Co., Cincinnati, O.
Van Wie, Irvin, Syracuse, N. Y.
Weiman Machine Works, Columbus, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.
Worthington, Henry R., 114 Liberty St., New York.

290 **Duplex Vertical, Plunger Pattern.**

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.
Knowles Steam Pump Works, 114 Liberty St., New York.
Snow Steam Pump Works, 114 Liberty St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Worthington, Henry R., 114 Liberty St., New York.

291 **Fire.**

American Fire Engine Co., Seneca Falls, N. Y.

MARINE FIRE PUMPS, continued

American Steam Pump Co., Battle Creek, Mich.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hooker Steam Pump Co., St. Louis, Mo.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E., & Bro., Ashland, O.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Snow Steam Pump Works, 114 Liberty St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Van Duzen, E. W., Co., Cincinnati, O.
Weiman Machine Works, Columbus, O.
Worthington, Henry R., 114 Liberty St., New York.

292 **Ship Deck.**

Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E., & Bro., Ashland, O.
Pulsometer Steam Pump Co., 135 Greenwich St., New York. *See adv. page 119.*
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.

293 **Vertical, Air.**

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Clayton Air Compressor Works, 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Knowles Steam Pump Works, 114 Liberty St., New York.
Manistee Iron Works Co., Manistee, Mich.
Worthington, Henry R., 114 Liberty St., New York.

294 **Vertical, Piston.**

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.
Knowles Steam Pump Works, 114 Liberty St., New York.
Myers, F. E., & Bro., Ashland, O.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Van Wie, Irvin, Syracuse, N. Y.
Worthington, Henry R., 114 Liberty St., New York.

295 **MASH.** For use in distilleries.

Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
McGowan, J. H., Co., Cincinnati, O.
National Foundry & Machine Co., Louisville, Ky.

MASH PUMPS, continued

Pulsometer Steam Pump Co., 135 Greenwich St., New York. *See adv. page 119.*
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

296 **MELTER PAN.** For use in making sugar, molasses and syrup.

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Knowles Steam Pump Works, 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works, Manistee, Mich.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Worthington, Henry R., 114 Liberty St., New York.

297 **OIL.** For pumping oil to cylinders.

Battle Creek Steam Pump Co., Battle Creek, Mich.
Blakeslee Mfg. Co., Du Quoin, Ill.
Darling Pump Co., Williamsport, Pa.
Deane Steam Pump Co., Holyoke, Mass.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Powell, Wm., Co., Cincinnati, O.
Pulling, Jas. G., & Co., Columbus, O.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Sherwood Mfg. Co., Buffalo, N. Y.

298 **PAPER MILL.** For use in the manufacture of pulp and paper. See also 257, Centrifugal Pumps.

Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Carthage Machine Co., Carthage, N. Y.
Deane Steam Pump Co., Holyoke, Mass.
Douglas, W. & B., Middletown, Conn.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Harmon Machine Co., Watertown, N. Y.
I. X. L. & Goshen Pump Co., Goshen, Ind.
Kingsford Foundry & Machine Co., Oswego, N. Y.
Knowles Steam Pump Works, 114 Liberty St., New York.
Lawrence Machine Co., Lawrence, Mass.
McGowan, John H., Co., Cincinnati, O.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Pusey & Jones Co., Wilmington, Del.
Pulsometer Steam Pump Co., 135 Greenwich St., New York.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.
Springfield Elevator & Pump Co., Springfield, Mass.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Trevor Mfg. Co., Lockport, N. Y.
Turners Falls Machine Co., Turners Falls, Mass.
Van Wie, Irvin, Syracuse, N. Y.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

PAPER MILL PUMPS, continued

Woodin & Little, 312 Market St., San Francisco, Cal.
Worthington, Henry R., 114 Liberty St., New York.

299 **POWER.** For pumping water where direct acting steam pumps are not necessary, or where the power must be taken from a line shaft.

Advance Pump & Compressor Co., Battle Creek, Mich.
Albany Steam Trap Co., Albany, N. Y.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Fire Engine Co., Seneca Falls, N. Y.
American Steam Pump Co., Battle Creek, Mich.
American Well Works, Aurora, Ill.
Athol Pump Co., Athol, Mass.
Barnes Mfg. Co., Mansfield, O.
Barr Pump Co., Germantown, Philadelphia, Pa.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Beloit Iron Works, Beloit, Wis.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Blake, W. H., Steam Pump Co., Fitchburg, Mass.
Blakeslee Mfg. Co., Du Quoin, Ill.
Boggs & Clarke, 535 S. Clinton St., Syracuse, N. Y.
Boyts, Porter & Co., Connellsville, Pa.
Bucyrus Co., South Milwaukee, Wis.
Buescher Mfg. Co., Elkhart, Ind.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Burdett-Rowntree Mfg. Co., 85-87 W. Jackson Blvd., Chicago.
Burroughs, Charles, Co., Newark, N. J.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Camp Engineering Co., 47 W. Lake St., Chicago, Ill.
Canton Pump Co., Canton, O.
Cardwell Machine Co., Richmond, Va.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Charter Gas Engine Co., Sterling, Ill.
Clayton Air Compressor Works, 114 Liberty St., New York.
Cleveland Faucet Co., 15 Frankfort St., Cleveland, O.
Columbiana Pump Co., Columbiana, O.
Cook Well Co., 703 Market St., St. Louis, Mo.
Corcoran, Andrew J., 11 John St., New York.
Craft, Jesse, 260 Front St., New York.
Crawford & McCrimmon Co., Brazil, Ind.
Creamery Package Mfg. Co., 180 Kinzie St., Chicago, Ill.
Darling Pump & Mfg. Co., Williamsport, Pa.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Davis, I. B., & Son, Hartford, Conn.
Davis-Johnson Co., 47 S. Canal St., Chicago, Ill.
Dean Bros. Steam Pump Co., 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Delamater Iron Works, 35 Warren St., New York.
Deming Co., Salem, O.
Diamond Drill & Machine Co., Birdsboro, Pa.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Douglas, W. & B., Middletown, Conn.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.

POWER PUMPS, continued

Downie Pump Co., Downieville, Pa.
Downington Mfg. Co., Ltd., East Downington, Pa.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Edwards, Joseph, & Co., 412 Water St., New York.
Elgin Mfg. Co., Elgin, Ill.
Elmes, Charles F., Engineering Works, 253 Fulton St., Chicago, Ill.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Erie Pump & Engine Co., Erie, Pa.
Erwin & Co., 35 N. Canal St., Chicago, Ill.
Fairbanks Co., Broome & Elm Sts., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Florence Machine Co., Florence, Mass.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Frenier, J. H., Rutland, Vt.
Frick Co., Waynesboro, Pa.
Fritz, Geo. J., Foundry & Machine Co., St. Louis, Mo.
Frost Mfg. Co., Galesburg, Ill.
Gardner Governor Co., Quincy, Ill.
Gleason-Peters Air Pump Co., 20 W. Houston St., New York.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Grant Iron Works, Mahanoy City, Pa.
Great Western Mfg. Co., Leavenworth, Kan.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Harris, Wm. A., Steam Engine Co., Providence, R. I.
Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.
Hayes Pump & Planter Co., Galva, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
Hersey Mfg. Co., South Boston, Mass.
Hill, William E., & Co., Kalamazoo, Mich.
Hill Machine Co., Anderson, Ind.
Holly Mfg. Co., Lockport, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Hooker Steam Pump Works, St. Louis, Mo.
Household Pump Co., 1237 Arch St., Philadelphia, Pa.
Howell, R. R., & Co., Minneapolis, Minn.
Humphrey Machine Co., Keene, N. H.
Humphryes Mfg. Co., Mansfield, O.
Hunt, Rodney, Machine Co., Orange, Mass.
I. X. L. & Goshen Pump Co., Goshen, Ind.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.
Jackson, Byron, San Francisco, Cal.
Jeanesville Iron Works Co., Jeanesville, Pa.
Jones, E. D., & Sons, Pittsfield, Mass.
Kaestner, Chas., & Co., 241 S. Jefferson St., Chicago, Ill.
Kansas City Hay Press Co., Kansas City, Mo.
Kelley, Benjamin F., & Son, 91 Liberty St., New York. *See adv. page 116.*
Kensington Engine Works, Ltd., 245 N. Broad St., Philda.
Keystone Engine & Machine Works, 5th & Buttonwood Sts., Philadelphia, Pa.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Knowles Steam Pump Works, 114 Liberty St., N. Y.
Knowlson & Kelly, Troy, N. Y.
La France Fire Engine Co., Elmira, N. Y.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.

POWER PUMPS, continued

Lake City Engineering Co., Erie, Pa.
Larzelere Machine Co., Williamsport, Pa.
Lawrence Machine Co., Lawrence, Mass.
Lindgren Mahan Fire Apparatus Works, 793 W. Lake St., Chicago, Ill.
Lucas, C. O., & Co., Greenville, O.
McDonald, A. Y., & Morrison Mfg. Co., Dubuque, Ia.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
Mansfield Engineering Co., Mansfield, O.
Maslin, John, & Son, 163 First St., Jersey City, N. J.
Mast, Foos Co., Springfield, O.
May Bros., Galesburg, Ill.
Mecklenburg Iron Works, Charlotte, N. C.
Mietz, August, 128 Mott St., New York.
Moline Pump Co., Moline, Ill.
Morris Machine Works, Baldwinsville, N. Y.
Morse, Andrew J., & Son, 138 Congress St., Boston, Mass.
Motter, Geo. F., & Sons, York, Pa.
Myers, F. E., & Bro., Ashland, O.
National Foundry & Machine Co., Louisville, Ky.
Nevin & Wetmore Iron Works, Lowville, N. Y.
Norwood Engineering Co., Florence, Mass.
Noye Mfg. Co., Buffalo, N. Y.
Oram, John S., 160-172 Coe St., Cleveland, O.
Patterson, Frank L., & Co., 26 Cortlandt St., New York.
Perkins Wind Mill & Axe Co., Mishawaka, Ind.
Pierce Well Engineering & Supply Co., 136 Liberty St., N. Y.
Pneumatic Engineering Co., 128 Broadway, New York.
Porter, J. E., Co., Ottawa, Ill.
Presbrey, C. H., & Co., Sterling, Ill.
Pulling, James G., & Co., Columbus, O.
Pusey & Jones Co., Wilmington, Del.
Queen City Engineering Co., Buffalo, N. Y.
Quimby, Wm. E., Inc., 86 Liberty St., New York.
Red Jacket Mfg. Co., Davenport, Ia.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Roberts, Geo. J., & Co., Dayton, O.
Rock River Machine Co., Janesville, Wis.
Roots, P. H. & F. M., Connersville, Ind.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.
San Francisco Tool Works, San Francisco, Cal.
Sherman, R. R., & Co., Boston, Mass.
Smith, S. Morgan, Co., York, Pa.
Smith, Myers & Schnier Co., Cincinnati, O.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Spence & Rideout, Nashua, N. H.
Springfield Elevator & Pump Co., Springfield, Mass.
Stewart Heater Co., Buffalo, N. Y. *See adv. page 109.*
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Strater, Herman, & Sons, 74 Sudbury St., Boston, Mass.
Taber Pump Co., Buffalo, N. Y.
Trahern Pump Co., Rockford, Ill.

POWER PUMPS, continued

Trevor Mfg. Co., Lockport, N. Y.
Union Iron Works, San Francisco, Cal.
Union Mfg. Co., New Britain, Conn.
Union Steam Pump Co., Battle Creek, Mich.
United States Pump & Supply Co., Toledo, O.
United States Wind Engine & Pump Co., Batavia, Ill.
Van Duzen, E. W., Co., Cincinnati, O.
Van Wie, Irvin, Syracuse, N. Y.
Ward, Charles, Charlestown, W. Va.
Warren Steam Pump Co., Warren, Mass.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Weiman Machine Works, Columbus, O.
Wells, F. C., Estate of, 116 S. Clinton St., Chicago, Ill.
Wetherill, Robt., & Co., Chester, Pa.
Whitehead, W. W., Co., Davenport, Ia.
Wilson-Snyder Mfg. Co., Ross & Water Sts., Pittsburg, Pa.
Winter, F. W., & Co., Faribault, Minn.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.
Worthington, Henry R., 114 Liberty St., New York.

300 **Duplex.**

American Well Works, Aurora, Ill.
Advance Pump & Compressor Co., Battle Creek, Mich.
Barr Pump Co., Germantown, Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Cardwell Machine Co., Richmond, Va.
Davis, I. B., & Son, Hartford, Conn.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Douglas, W. & B., Middletown, Conn.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.
Fairbanks Co., Broome & Elm Sts., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Hall Steam Pump Co., Allegheny, Pa.
Henion & Hubbell, 61-69 N. Jefferson St., Chicago, Ill.
Hooker Steam Pump Co., St. Louis, Mo.
Kelley, Benjamin F., & Son, 91 Liberty St., New York. *See adv. page 116.*
Kensington Engine Works, Ltd., 245 N. Broad St., Philda.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Lucas, C. O., & Co., Greenville, O.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
New York Air Brake Co., 66 Broadway, New York.
Pulling, James G., & Co., Columbus, O.
Snow Steam Pump Works, 114 Liberty St., New York.

POWER PUMPS, DUPLEX, continued

Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Union Iron Works, San Francisco, Cal.
Wilson-Snyder Mfg. Co., Ross & Water Sts., Pittsburg, Pa.
Worthington, Henry R., 114 Liberty St., New York.

301 **Triplex.**

American Well Works, Aurora, Ill.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Fairbanks Co., Broome & Elm Sts., New York.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
Knowles Steam Pump Works, 114 Liberty St., New York.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Van Wie, Irvin, Syracuse, N. Y.

302 **ROTARY.** For fire purposes. See 257, Centrifugal Pumps.

American Fire Engine Co., Seneca Falls, N. Y.
American Well Works, Aurora, Ill.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Barnes Mfg. Co., Mansfield, O.
Connersville Blower Co., Connersville, Ind.
Creamery Package Mfg. Co., 180 Kinzie St., Chicago, Ill.
Davis-Johnson Co., 47 S. Canal St., Chicago, Ill.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Detroit Pump Co., Detroit, Mich.
Douglas, W. & B., Middletown, Conn.
Fairbanks Co., Broome & Elm Sts., New York.
Fales & Jenks Machine Co., Pawtucket, R. I.
Flint & Walling Mfg. Co., Kendallville, Ind.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y.
Great Western Mfg. Co., Leavenworth, Kan.
Hersey Mfg. Co., South Boston, Mass.
Holyoke Machine Co., Holyoke, Mass.
Humphrey Machine Co., Keene, N. H.
Humphryes Mfg. Co., Mansfield, O.
Jones, E. D., & Son Co., Pittsfield, Mass.
Roots, P. H. & F. M., Co., Connersville, Ind.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Taber Pump Co., Buffalo, N. Y.
Temple Pump Co., 16-28 W. 15th Pl., Chicago, Ill.
Trahern Pump Co., Rockford, Ill.
Turners Falls Machine Co., Turners Falls, Mass.
Union Mfg. Co., New Britain, Conn.
Union Steam Pump Co., Battle Creek, Mich.
United States Pump & Supply Co., Toledo, O.
Wilbraham-Green Blower Co., 2518 Frankford Ave., Philda.
Woodin & Little, 312 Market St., San Francisco, Cal.

303 **SOAP.**

American Steam Pump Co., Battle Creek, Mich.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Deane Steam Pump Co., Holyoke, Mass.
Dopp, H. Wm., & Co., Buffalo, N. Y.
Hersey Mfg. Co., South Boston, Mass.
Pulsometer Steam Pump Co., 135 Greenwich St., New York.
See adv. page 119.

304 **STEAM.** For all pumping purposes.

Advance Pump & Compressor Co., Battle Creek, Mich.
Albany Steam Trap Co., Albany, N. Y.
Alberger Condenser Co., 95 Liberty St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Well Works, Aurora, Ill.
Athol Pump Co., Athol, Mass.
Atwell Machinery Co., Pittsburg, Pa.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Barnes Mfg. Co., Mansfield, O.
Barr Pump Co., Germantown, Philadelphia, Pa.
Black-Clawson Co., Hamilton, O.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Blake, W. H., Steam Pump Co., Fitchburg, Mass.
Blakeslee Mfg. Co., Du Quoin, Ill.
Boyts, Porter & Co., Connellsville, Pa.
Bulkley, Henry W., 141 Broadway, New York.
Burdett-Rowntree Mfg. Co., 85-87 W. Jackson Blvd., Chicago.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Cameron-Tennant Machine Works, Richmond, Va.
Camp Engineering Co., 47 W. Lake St., Chicago, Ill.
Canton Pump Co., Canton, O.
Cardwell Machine Co., Richmond, Va.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Carpenter, Thomas D., Machine Works, 93 Pearl St., Brooklyn, N. Y.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Clayton Air Compressor Works, 114 Liberty St., New York.
Columbiana Pump Co., Columbiana, O.
Conrad, Thomas P., 119 S. 4th St., Philadelphia, Pa.
Cook, A. D., Lawrenceburg, Ind.
Cook Well Co., 703 Market St., St. Louis, Mo.
Crawford & McCrimmon Co., Brazil, Ind.
Creamery Package Mfg. Co., 180 inzie St., Chicago, Ill.
Darling Pump & Mfg. Co., Williamsport, Pa.
D'Auria Pumping Engine Co., Philadelphia, Pa.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Davis, F. H., & Co., Boston, Mass.
Davis, I. B., & Son, Hartford, Conn.
Davis-Johnson Co., 47 S. Canal St., Chicago, Ill.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Diamond Drill & Machine Co., Birdsboro, Pa.
Douglas, W. & B., Middletown, Conn.
Dow, Geo. E., Pumping Engine Co., 179 First St., San Francisco, Cal.

STEAM PUMPS, continued

Downie Pump Co., Downieville, Pa.
Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Edwards, Joseph, & Co., 412 Water St., New York.
Elliott, George E., Calais, Me.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Erie Pump & Engine Co., Erie, Pa.
Erwin & Co., 35 N. Canal St., Chicago, Ill.
Fairbanks Co., Broome & Elm Sts., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Flint & Walling Mfg. Co., Kendallville, Ind.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Franklin Iron Works, Port Carbon, Pa.
Fritz, Geo. J., Foundry & Machine Co., St. Louis, Mo.
Gardner Governor Co., Quincy, Ill.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Grant Iron Works, Mahanoy City, Pa.
Great Western Mfg. Co., Leavenworth, Kan.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Harris, William A., Steam Engine Co., Providence, R. I.
Hayes Pump & Planter Co., Galva, Ill.
Hill Machine Co., Anderson, Ind.
Hill, William E., & Co., Kalamazoo, Mich.
Holly Mfg. Co., Lockport, N. Y.
Hooker Steam Pump Works, St. Louis, Mo.
Household Pump Co., 1237 Arch St., Philadelphia, Pa.
Hubbard's, Norman, Sons, 265 Water St., Brooklyn, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Hunt, Rodney, Machine Co., Orange, Mass.
I. X. L. & Goshen Pump Co., Goshen, Ind.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.
Jackson, Byron, San Francisco, Cal.
Jeanesville Iron Works Co., Jeanesville, Pa.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Kehoe, William, & Sons, Savannah, Ga.
Kelley, Benjamin F., & Son, 91 Liberty St., New York. *See adv. page 116.*
Kensington Engine Works, Ltd., 245 N. Broad St., Philda.
Keystone Engine & Machine Works, 5th & Buttonwood Sts., Philadelphia, Pa.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Knowles Steam Pump Works, 114 Liberty St., New York.
Knowlson & Kelly, Troy, N. Y
La France Fire Engine Co., Elmira, N. Y.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Lake City Engineering Co., Erie, Pa.
Lang & Goodhue Mfg. Co., Burlington, Vt.
Lindgren Mahan Fire Apparatus Works, 793 W. Lake St., Chicago, Ill.
Lovegrove & Co., 143 N. 3d St., Philadelphia, Pa.
McDonald, A. Y., & Morrison Mfg. Co., Dubuque, Ia.
McDowell & Co., Pittsburg, Pa.
McGowan, John H., Co., Cincinnati, O.
McLeod, Walter, & Co., Cincinnati, O.
McSwegan, F., & Sons, 120 Liberty St., New York.

STEAM PUMPS, continued

Manistee Iron Works Co., Manistee, Mich.
Mansfield Engineering Co., Mansfield, O.
Maslin, J., & Sons, 163 First St., Jersey City, N. J.
Mason Regulator Co., 158 Summer St., Boston, Mass.
Mast, Foos & Co., Springfield, O.
May Bros., Galesburg, Ill.
Mecklenburg Iron Works, Charlotte, N. C.
Moline Pump Co., Moline, Ill.
Morris County Machine & Iron Co., Dover, N. J.
Morris Machine Works, Baldwinsville, N. Y.
Morse, Andrew J., & Son, 138 Congress St., Boston, Mass.
Motter, Geo. F., & Sons, York, Pa.
Murray Iron Works Co., Burlington, Ia.
Myers, F. E., & Bro., Ashland, O.
National Foundry & Machine Co., Louisville, Ky.
National Steam Pump Co., Upper Sandusky, O.
New York Air Brake Co., 66 Broadway, New York.
Norwood Engineering Co., Florence, Mass.
Noye Mfg. Co., Buffalo, N. Y.
Oakes, William L., Decatur, Ill.
Olney & Warrin, 36 Dey St., New York.
Oram, John S., 160-172 Coe St., Cleveland, O.
Perkins Wind Mill & Axe Co., Mishawaka, Ind.
Phelps & Bigelow Wind Mill Co., Kalamazoo, Mich.
Pierce Well, Engineering & Supply Co., 136 Liberty St., N. Y.
Pittsburg Valve, Foundry & Construction Co., Pittsburg, Pa.
Pneumatic Engineering Co., 128 Broadway, New York.
Porter, J. E., Co., Ottawa, Ill.
Presbrey, C. H., & Co., Sterling, Ill.
Prescott Steam Pump Co., Milwaukee, Wis.
Pulling, James G., & Co., Columbus, O.
Pulsometer Steam Pump Co., 135 Greenwich St., New York. *See adv. page 119.*
Queen City Engineering Co., Buffalo, N. Y.
Racine Engine & Iron Works, Racine, Wis.
Red Jacket Mfg. Co., Davenport, Ia.
Rees, Jas., & Sons Co., Pittsburg, Pa.
Reliance Machine & Tool Works, 3323 Franklin Ave., St. Louis, Mo.
Rider-Ericsson Engine Co., 35 Warren St., New York.
Roberts, Geo. J., & Co., Dayton, O.
Roots, P. H. & F. M., Co., Connersville, Ind.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.
Schofield, J. S., Sons Co., Macon, Ga.
Scranton Steam Pump Co., Scranton, Pa.
Smedley Steam Pump Co., Dubuque, Ia.
Smith, S. Morgan Co., York, Pa.
Smith, Myers & Schnier Co., Cincinnati, O.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Springfield Elevator & Machine Co., Springfield, Mass.
Squier, Geo. L., Mfg. Co., Buffalo, N. Y.
Stewart Heater Co., Buffalo, N. Y. *See adv. page 109.*
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.

STEAM PUMPS, continued

Taber Pump Co., Buffalo, N. Y.
Trahern Pump Co., Rockford, Ill.
Union Iron Works, San Francisco, Cal.
Union Mfg. Co., New Britain, Conn.
Union Steam Pump Co., Battle Creek, Mich.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Van Duzen, E. W., Co., Cincinnati, O.
Ward, Charles, Charlestown, W. Va.
Warren Steam Pump Co., Warren, Mass.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Weber Gas and Gasoline Engine Co., Kansas City, Mo.
Weiman Machine Works, Columbus, O.
Wells, F. C., Estate of, 116 S. Clinton St., Chicago, Ill.
Wetherill, Robert, & Co., Chester, Pa.
Williams Mfg. Co., Kalamazoo, Mich.
Wilson-Snyder Mfg. Co., Rose & Water Sts., Pittsburg, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.
Woodmanse & Hewitt Mfg. Co., Freeport, Ill.
Worthington, Henry R., 114 Liberty St., New York.
Young, E. R., & Sons, Titusville, Pa.

305 **Duplex.**

American Well Works, Aurora, Ill.
Barr Pump Co., Germantown, Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Blakeslee Mfg. Co., Du Quoin, Ill.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Canton Pump Co., Canton, O.
Cardwell Machine Co., Richmond, Va.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Challenge Windmill and Feed Mill Co., Batavia, Ill.
Deane Steam Pump Co., Holyoke, Mass.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Gardner Governor Co., Quincy, Ill.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Jackson, Byron, San Francisco, Cal.
Jeanesville Iron Works, Jeanesville, Pa.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
Nevin & Wetmore Iron Works, Lowville, N. Y.
Pulling, James G., & Co., Columbus, O.
Queen City Engineering Co., Buffalo, N. Y.
Roberts, Geo. J., & Co., Dayton, O.
Smedley Steam Pump Co., Dubuque, Ia.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Springfield Elevator & Pump Co., Springfield, Mass.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Vulcan Iron Works, Wilkesbarre, Pa.

STEAM PUMPS, DUPLEX, continued

Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Worthington, Henry R., 114 Liberty St., New York.

306 **Jet.**

American Steam Pump Co., Battle Creek, Mich.
Barr Pump Co., Germantown, Philadelphia, Pa.
Blakeslee Mfg. Co., Du Quoin, Ill.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
McGowan, John H., Co., Cincinnati, O.
Pemberthy Injector Co., Detroit, Mich.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Tranter-Davison Mfg. Co., Pittsburg, Pa.
Van Duzen, E. W., Co., Cincinnati, O.

307 **Vertical.**

American Steam Pump Co., Battle Creek, Mich.
American Well Works, Aurora, Ill.
Blake, Geo. F., Pump Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Fairbanks Co., Broome & Elm Sts., New York.
Foster Pump Works, 36 Bridge St., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works, Manistee, Mich.
Pulling, James G., & Co., Columbus, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Warren Steam Pump Co., Warren, Mass.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Worthington, Henry R., 114 Liberty St., New York.

308 **TEST.** For testing gages, tanks, cylinders, etc.

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.

Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Fairbanks Co., Broome & Elm Sts., New York.
Goulds Mfg. Co., Seneca Falls, N. Y.
Haydenville Co., Haydenville, Mass.
Henderer's, A. L., Sons, Wilmington, Del.
Humphryes Mfg. Co., Mansfield, O.
Knapp Mfg. Co., 24 Frankfort St., New York.
Lonergan, J. E., & Co., 211 Race St., Philadelphia, Pa.
Olsen, Tinius, & Co., 500 N. 12th St., Philadelphia, Pa.

TEST PUMPS, continued

Quimby, William E., Inc., 86 Liberty St., New York.
Schaeffer & Budenberg, Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Watson-Stillman Co., 46 Dey St., New York.

309 **Boiler.**

Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Barnes Mfg. Co., Mansfield, O.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Darling Pump & Mfg. Co., Williamsport, Pa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Fairbanks Co., Broome & Elm Sts., New York.
Goulds Mfg. Co., Seneca Falls, N. Y.
Henderer's, A. L., Sons, Wilmington, Del.
Humphryes Mfg. Co., Mansfield, O.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Scovill Mfg. Co., Waterbury, Conn.

310 **Hydraulic.**

American Steam Pump Co., Battle Creek, Mich.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Belfield, H., & Co., 435 N. Broad St., Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Fairbanks Co., Broome & Elm Sts., New York.
Goulds Mfg. Co., Seneca Falls, N. Y. *See adv. page 115.*
Haydenville Co., Haydenville, Mass.
Howell, R. R., & Co., Minneapolis, Minn.
Knowles Steam Pump Works, 114 Liberty St., New York.
Norwich Belt Mfg. Co., Norwich, Conn.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philda.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Olsen, Tinius, & Co., 500 N. 12th St., Philadelphia, Pa.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Union Steam Pump Co., Battle Creek, Mich.
Watson-Stillman Co., 46 Dey St., New York.
Worthington, Henry R., 114 Liberty St., New York.

311 **Inspectors'.**

American Steam Gauge & Valve Mfg. Co., 220 Camden St., Boston, Mass.
Ashcroft Mfg. Co., 85 Liberty St., New York.
Ashton Valve Co., 271 Franklin St., Boston, Mass.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Fairbanks Co., Broome & Elm Sts., New York.

TEST PUMPS, INSPECTORS', continued

Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Star Brass Mfg. Co., 114 E. Dedham St., Boston, Mass.

312 **VACUUM.** Used in connection with vacuum pans and condensing engines; also in all drying and evaporating systems.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Air Compressor Works, 26 Cortlandt St., New York.
American Steam Pump Co., Battle Creek, Mich.
Barnes Mfg. Co., Mansfield, O.
Barr Pump Co., Germantown, Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Buescher Mfg. Co., Elkhart, Ind.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Canton Pump Co., Canton, O.
Carpenter, Thomas D., Machine Works, 93 Pearl St., Brooklyn, N. Y.
Clark Novelty Co., Rochester, N. Y.
Clayton Air Compressor Works, 114 Liberty St., New York.
Crosby Steam Gage & Valve Co., 97 Oliver St., Boston, Mass.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Goulds Mfg. Co., Seneca Falls, N. Y.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Hubbard's, Norman, Sons, 265 Water St., Brooklyn, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works, Manistee, Mich.
Portland Co., Inc., Portland, Me.
Pulling, James G., & Co., Columbus, O.
Pulsometer Steam Pump Co., 135 Greenwich St., New York.
See adv. page 119.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Sargent & Greenleaf Co., Rochester, N. Y.
Schaeffer & Budenberg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Union Steam Pump Co., Battle Creek, Mich.
Warren Steam Pump Co., Warren, Mass.
Wilson-Snyder Mfg. Co., Ross & Water Sts., Pittsburg, Pa.
Woodin & Little, 312 Market St., San Francisco, Cal.
Worthington, Henry R., 114 Liberty St., New York.

313 **Automatic Steam.**

Maslin, John, & Son, 163 First St., Jersey City, N. J.

VACUUM PUMPS, continued

314 Crank and Fly Wheel.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barr Pump Co., Germantown, Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Bushnell, G. H., Mfg. Co., Thompsonville, Conn.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Cardwell Machine Co., Richmond, Va.
Clayton Air Compressor Works, 114 Liberty St., New York.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Erwin & Co., 35 N. Canal St., Chicago, Ill.
Fairbanks Co., Broome & Elm Sts., New York.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
Knowles Steam Pump Works, 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Warren Steam Pump Co., Warren, Mass.
Woodin & Little, 312 Market St., San Francisco, Cal.
Worthington, Henry R., 114 Liberty St., New York.

315 Duplex.

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Canton Pump Co., Canton, O.
Clayton Air Compressor Works, 114 Liberty St., New York.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works, Manisctee, Mich.
Pulling, James G., & Co., Columbus, O.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Warren Steam Pump Co., Warren, Mass.
Worthington, Henry R., 114 Liberty St., New York.

316 Duplex Fly Wheel.

Barr Pump Co., Germantown, Philadelphia, Pa.
Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Clayton Air Compressor Works, 114 Liberty St., New York.
Deane Steam Pump Co., Holyoke, Mass.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Fairbanks Co., Broome & Elm Sts., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Warren Steam Pump Co., Warren, Mass.
Worthington, Henry R., 114 Liberty St., New York.

317 Duplex and Single Actuated.

Canton Pump Co., Canton, O.
Hall Steam Pump Co., Allegheny, Pa.

VACUUM PUMPS, continued

318 **Power.**

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 East 23d St., New York. *See adv. page 112.*
Canton Pump Co., Canton, O.
Clayton Air Compressor Works, 114 Liberty St., New York.
Conover Mfg. Co., Jersey City, N. J.
Fairbanks Co., Broome & Elm Sts., New York.
Knowles Steam Pump Works, 114 Liberty St., New York.
Laidlaw-Dunn-Gordon Co., 114 Liberty St., New York.
Pulling, James G., & Co., Columbus, O.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Warren Steam Pump Co., Warren, Mass.
Worthington Henry R., 114 Liberty St., New York.

319 VERTICAL DUPLEX.

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Clayton Air Compressor Works, 114 Liberty St., New York.
Fairbanks Co., Broome & Elm Sts., New York.
Knowles Steam Pump Works, 114 Liberty St., New York.

320 VERTICAL SINGLE.

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Clayton Air Compressor Works, 114 Liberty St., New York.
Knowles Steam Pump Works, 114 Liberty St., New York.

321 VERTICAL TRIPLEX.

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Knowles Steam Pump Works, 114 Liberty St., New York.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.

322 **Single.**

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Buffalo Steam Pump Co., North Tonawanda, N. Y.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Canton Pump Co., Canton, O.
Clayton Air Compressor Works, 114 Liberty St., New York.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Dean Bros. Steam Pump Works, 10th St. & Senate Ave., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Epping-Carpenter Co., 2410 Penn Ave., Pittsburg, Pa.
Fairbanks Co., Broome & Elm Sts., New York.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Hooker Steam Pump Co., St. Louis, Mo.
Knowles Steam Pump Works, 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Manistee Iron Works Co., Manistee, Mich.
Pulling, James G., & Co., Columbus, O.
Snider-Hughes Co., Cleveland, O.
Snow Steam Pump Works, 114 Liberty St., New York.

VACUUM PUMPS, SINGLE, continued

Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Temple Pump Co., 16-28 W. 15th St., Chicago, Ill.
Union Steam Pump Co., Battle Creek, Mich.
Warren Steam Pump Co., Warren, Mass.
Worthington, Henry R., 114 Liberty St., New York.

323 **Single Fly Wheel.**

Blake, Geo. F., Mfg. Co., 114 Liberty St., New York.
Cameron, A. S., Steam Pump Works, 433 E. 23d St., N. Y.
Clayton Air Compressor Works, 114 Liberty St., New York.
Davidson, M. T., 43-53 Keap St., Brooklyn, N. Y.
Deane Steam Pump Co., Holyoke, Mass.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hall Steam Pump Co., Allegheny, Pa.
Knowles Steam Pump Works, 114 Liberty St., New York.
McGowan, John H., Co., Cincinnati, O.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Worthington, Henry R., 114 Liberty St., New York.

324 **WINDMILL.**

Barnes Mfg. Co., Mansfield, O.
Carroll Iron Works, 719 Carroll Ave., Chicago, Ill.
Cedar Rapids Pump Co., Cedar Rapids, Ia.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Cook, A. D., Lawrenceburg, Ind.
Corcoran, Andrew J., 11 John St., New York.
Deming Co., Salem, O.
Dempster Mill Mfg. Co., Beatrice, Neb.
Fairbanks Co., Broome & Elm Sts., New York.
Flint & Walling Mfg. Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hayes Pump & Planter Co., Galva, Ill.
Heller, Aller & Co., Napoleon, O.
Humphryes Mfg. Co., Mansfield, O.
Lansing Motor & Pump Co., Lansing, Mich.
Maud S. Windmill & Pump Co., Lansing, Mich.
Myers, F. E., & Bro., Ashland, O.
Porter, J. E., Co., Ottawa, Ill.
Red Cross Mfg. Co., Bluffton, Ind.
Stover Mfg. Co., Freeport, Ill.
Union Mfg. Co., New Britain, Conn.
United States Wind Engine & Pump Co., Batavia, Ill.
Trahern Pump Co., Rockford, Ill.
Ward Pump Co., Rockford, Ill.

SECTION III

RAILWAY EQUIPMENT.

INDEX TO DEPARTMENTS.

	Page
Rolling Stock Equipment - - - - - - - -	435
Track, Construction and Repair Equipment - -	448

MANUFACTURERS OF

RAILWAY EQUIPMENT.

Alphabetical Index.

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.—Car Heating and Lighting Apparatus.
Aetna Standard Iron & Steel Co., Bridgeport, O.—Rails.
Ajax Forge Co., Blue Island & Hayne Aves., Chicago, Ill.—Frogs and Crossings.
Ajax Metal Co., 46-52 Richmond St., Philadelphia, Pa.—Bearings.
Akron Iron Co., Akron, O.—Rails.
Alabama Frog & Switch Co., Anniston, Ala.—Frogs and Crossings.
Alexander Car Replacer Co., Scranton, Pa.—Replacing Frogs.
Allentown Rolling Mills, Allentown, Pa.—Frogs and Crossings.
Allston Foundry Co., 620 Atlantic Ave., Boston, Mass.—Brake Shoes.
American Brake Co., St. Louis, Mo.—Brakes.
American Brake Shoe & Foundry Co., 170 Broadway, New York.—Brake Shoes, etc.
American Bridge Co., 100 Broadway, New York.—Cattle Guards, etc.
American Car & Foundry Co., Lincoln Trust Bldg., St. Louis, Mo.—Axles, Cars, etc.
American Dust Guard Co., Columbus, O.—Dust Guards.
American Electric Switch Co., Pittsburg, Pa.—Signals, Switches, etc.
American Frog & Mfg. Co., 302-303 New England Bldg., Kansas City, Mo.—Frogs, Crossings, Switches.
American Frog & Switch Co., Hamilton, O.—Frogs, Crossings.
American Locomotive Co., 25 Broad St., New York.—Locomotives.
American Locomotive Sander Co., 13th & Willow Sts., Philadelphia, Pa.—Track Sanders.
American Metallic Packing & Supply Co., Cleveland, O.—Track Sanders.
American Refining & Smelting Co., Cincinnati, O.—Car Seals.
American Spiral Spring Co., Pittsburg, Pa.—Car Springs.
American Steel Casting Co., Thurlow, Pa.—Brake Shoes.
American Steel Foundries, 74 Broadway, New York.—Cars, Car Trucks, etc.
American Steel & Wire Co., The Rookery, Chicago, Ill.—Car Springs, Rail Bonds.
American Valve & Meter Co., Cincinnati, O.—Railway Water Columns.
Anti-Friction Bearing Co., Pittsburg, Pa.—Bearings.
Atlantic Brass Co., 192 Broadway, New York.—Bearings.
Atlas Bolt & Screw Co., Cleveland, O.—Turn and Transfer Tables.

Atlas Railway Supply Co., Manhattan Bldg., Chicago, Ill.—Rail Braces, Joints, etc.
Aurora Metal Co., Aurora, Ill.—Bearings.
Baker, Jas. H., Mfg. Co., 2324 Farmers' Bank Bldg., Pittsburg, Pa.—Track Tools, etc.
Baker, W. C., 143 Liberty St., New York.—Car Heating and Lighting Apparatus.
Baldwin Locomotive Works, 500 N. Broad St., Philadelphia, Pa.—Locomotives.
Baltimore Car Wheel Co., Patterson Av. & Payson St., Baltimore, Md.—Car Fenders, Wheels, etc.
Baltimore Railway Specialty Co., Calvert Bldg., Baltimore, Md.—Center Bearings.
Barbour-Stockwell Co., Cambridgeport, Mass.—Frogs, Crossings, Switches, etc.
Barney & Smith Car Co., Dayton, O.—Cars, Trucks.
Barnum-Richardson Co., Lime Rock, Conn.—Brake Shoes, Car Wheels.
Battle Creek Iron Works, Battle Creek, Mich.—Car Wheels.
Bay State Electric Heat & Light Co., 89 State St., Boston, Mass.—Car Heating and Lighting Apparatus.
Beall Non-Pounding Frog & Crossing Co., Merchants Bank Bldg., South Bend, Ind.—Frogs and Crossings.
Bemis Car Truck Co., 120-122 Liberty St., New York.—Electric Car Trucks.
Best Mfg. Co., Pittsburg, Pa.—Railway Water Columns.
Bethlehem Steel Co., South Bethlehem, Pa.—Axles.
Bettendorf Axle Co., Davenport, Iowa.—Freight Cars, Trucks.
Bird, F. W., & Son, E. Walpole, Mass.—Car Roofing.
Bitner, C. W., Car Equipment Co., Terre Haute, Ind.—Car Seals.
Bliss, R., Mfg. Co., Pawtucket, R. I.—Car Gates and Guards.
Block-Pollak Iron Co., Cincinnati, O.—Axles.
Bonnot Co., Canton, O.—Turn and Transfer Tables.
Bonzano Rail Joint Co., 22 S. 15th St., Philadelphia, Pa.—Rail Joints.
Boston Belting Co., 256 Devonshire St., Boston, Mass.—Air Brake Hose, etc.
Boston Bridge Works, 47 Winter St., Boston, Mass.—Turn and Transfer Tables.
Boston Car Wheel Co., Chelsea, Mass.—Car Wheels.
Boston Forge Co., 340 Maverick St., East Boston, Mass.—Axles.
Boston Woven Hose & Rubber Co., Cambridgeport, Mass.—Air Brake Hose.
Boyer & Radford, Dayton, O.—Car Movers.
Brady Brass Co., Jersey City, N. J.—Bearings.
Bradley, O., & Sons, Worcester, Mass.—Passenger Cars.
Brill, J. G., Co., 62d St. and Woodland Ave., Philadelphia, Pa.—Cars, Trucks, etc., for Street Railways.
Brown Car Wheel Works, Buffalo, N. Y.—Car Wheels.
Brown, Harold P., 120 Liberty St., N. Y.—Rail Bonds.
Brownell Car Co., 2300 No. Broadway, St. Louis, Mo.—Car Gates and Guards.
Buckeye Steel Castings Co., Columbus, O.—Couplers and Draw Bars, etc.
Bucyrus Co., So. Milwaukee, Wis.—Wrecking Cars, Car Unloaders.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.—Construction Cars, Turn and Transfer Tables, etc.

Buffalo Brake Beam Co., Buffalo, N. Y.—Bolsters, Brake Beams.
Buffalo Seal & Press Co., Hudson & 7th Sts., Buffalo, N. Y.—Car Seals.
Butler Draw Bar Attachment Co., Cleveland, O.—Couplers and Draw Bars.
Butterworth & Lowe, Grand Rapids, Mich.—Logging Cars, Car Wheels.
Byers, John F., Machine Co., Ravenna, O.—Light Locomotives.
California Car Works, San Francisco, Cal.—Street Railway Cars, etc.
Cambria Steel Co., 15th and Market Sts., Philadelphia, Pa.—Axles, Rails, etc.
Camel Co., Old Colony Bldg., Chicago, Ill.—Bearings, Car Doors, Fittings, etc.
Carbon Steel Co., Pittsburg, Pa.—Axles.
Carnegie Steel Co., Pittsburg, Pa.—Rails, Turn and Transfer Tables.
Carrington Air Brake Co., Matteawan, N. Y.—Air Brakes.
Caswell Car Co., Fisher Bldg., Chicago, Ill.—Dump and Freight Cars.
Catawissa Car & Foundry Co., Catawissa, Pa.—Dump and Logging Cars, etc.
Cayuta Wheel & Foundry Co., Sayre, Pa.—Axles and Car Wheels.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.—Cars and Car Wheels.
Chester Steel Castings Co., 407 Sansom St., Philadelphia, Pa. Brake Shoes, Car Wheels.
Chicago Brass & Copper Works, Monadnock Blk., Chicago, Ill.—Bearings.
Chicago Bridge & Iron Co., 105th and Throop Sts., Chicago, Ill.—Turn and Transfer Tables.
Chicago Car Heating Co., Chicago, Ill.—Car Heating and Lighting Apparatus.
Chicago Grain Door Co., 931 Monadnock Blk., Chicago, Ill.—Car Door Fittings.
Chicago Car and Locomotive Works, Fisher Bldg., Chicago, Ill.—Cars.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.—Locomotive Bell Ringers.
Chicago Railway Equipment Co., 40th St. and Princeton Ave., Chicago, Ill.—Brake Beams.
Cleveland Car Co., West Park, O.—Dump Cars, Turn and Transfer Tables.
Cleveland City Forge & Iron Co., Cleveland, O.—Axles, Turnbuckles, etc.
Cleveland Frog & Crossing Co., Cleveland, O.—Frogs and Crossings.
Climax Stock Guard Co., Canton, O.—Cattle Guards.
Clinton Bridge & Iron Works, Clinton, Iowa.—Turn and Transfer Tables.
Colorado Fuel & Iron Co., Denver, Col.—Nut Locks.
Columbia Bridge Co., Pittsburg, Pa.—Turn and Transfer Tables.
Columbus Iron Works Co., Columbus, Ga.—Brake Shoes.
Columbia Lock Nut Co., Inc., Bridgeport, Conn.—Nut Locks.
Commonwealth Railway Supply Co., Monadnock Blk., Chicago, Ill.—Brake Beams, Shoes, etc.

Commonwealth Steel Co., Bank of Commerce Bldg., St. Louis, Mo.—Couplers and Draw Bars, etc.
Consolidated Car Fender Co., Providence, R. I.—Car Fenders.
Consolidated Car Heating Co., 413-423 No. Pearl St., Albany, N. Y.—Car Heating and Lighting Apparatus.
Consolidated Railway Electric Lighting & Equipment Co., 11 Pine St., New York.—Car Heating and Lighting Apparatus.
Continuous Rail Joint Co. of America, 912 Prudential Bldg., Newark, N. J.—Rail Braces and Joints.
Cortwright Metal Roofing Co., 50 N. 23d St., Philadelphia, Pa. Car Roofing.
Coughlin-Sanford Switch Co., 25 Broad St., New York.—Frogs. and Crossings, Switches, etc.
Crane Co., 10 N. Jefferson St., Chicago, Ill.—Air Brake Fittings and Couplings.
Crescent Brake Shoe Co., 125 Hudson St., Philadelphia, Pa.—Brake Shoes.
Crouse-Hinds Electric Co., Syracuse, N. Y.—Headlights.
Damascus Brake Beam Co., St. Louis, Mo.—Brake Beams.
Damascus Bronze Co., Pittsburg, Pa.—Bearings.
Davenport Locomotive Works, Davenport, Iowa.—Light Locomotives.
Davis & Bryan, Philadelphia, Pa.—Couplers and Draw Bars.
Dayton Malleable Iron Co., Dayton, O.—Couplers and Draw Bars, etc.
Dayton Mfg. Co., Dayton, O.—Headlights, Switch Locks.
De Laney Forge & Iron Co., 306 Perry St., Buffalo, N. Y.—Axles.
Detwiller & Street, Fireworks Mfg. Co., 172 Fulton St., New York.—Torpedoes.
De Witt Sand Box Co., Troy, N. Y.—Track Sanders.
Dexter Mfg. Co., St. Louis, Mo.—Brake Beams.
Diamond Rubber Co., Akron O.—Air Brake Hose.
Diamond State Car Spring Co., Wilmington, Del.—Car Springs.
Diamond State Steel Co., Wilmington, Del.—Rail Joints, Tie Plates, etc.
Dietz, R. E., & Co., 35 Laight St., New York.—Headlights.
Dilworth, Porter & Co., Pittsburg, Pa.—Tie Plates.
Dorner Truck & Foundry Co., Logansport, Ind.—Axles, Trucks.
Dressel Railway Lamp Works, 3876 Park Ave., New York.—Headlights, Signals.
Duner, John C., 116 S. Clinton St., Chicago, Ill.—Track Sanders.
Dunning, Edward L., Co., 64 Federal St., Boston, Mass.—Car Fenders.
Eastern Bridge & Structural Co., Worcester, Mass.—Turn and Transfer Tables.
Eastern Forge Co., Nashua, N. H.—Axles.
Eclipse Car Fender Co., Cleveland, O.—Car Fenders.
Economy Car Heating Co., Portland, Me.—Car Heating and Lighting Apparatus.
Economy Locomotive Sander Co., Baltimore, Md.—Track Sanders.
Edgar Car Lock & Seal Co., Iola, Kan.—Car Seals.
Edge Moor Bridge Works, Wilmington, Del.—Turn and Transfer Tables.
Edward Railroad Electric Light Co., Monadnock Blk., Chicago, Ill.—Headlights.

Elkhart Frog & Crossing Works, Elkhart, Ind.—Frogs, Crossings, Switches, etc.
Elliot Frog & Switch Co., East St. Louis, Ill.—Frogs, Crossings, Switches, etc.
Erie Car Works, Erie, Pa.—Cars.
Eureka Nut Lock Co., Pittsburg, Pa.—Nut Locks.
Excelsior Car Roof Co., Chemical Bldg., St. Louis, Mo.—Car Roofing.
Eyeless Tool Co., 26 Cortlandt St., New York.—Track Tools.
Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.—Cars, Railway Water Columns, etc.
Falk Co., Milwaukee, Wis.—Frogs, Crossings, Rails, etc.
Farist Steel Co., Bridgeport, Conn.—Car Springs, etc.
Fisher Rail Joint Works, Newark, N. J.—Rail Joints.
Flagg, Stanley G., & Co., 424 N. 19th St., Philadelphia, Pa.—Fittings and Couplings.
Flood, P., Albany, N. Y.—Brakes.
Forsyth Automatic Air & Steam Coupler Co., The Rookery, Chicago, Ill.—Couplers and Draw Bars.
Fort Madison Iron Works, Fort Madison, Ia.—Car Wheels.
Fort Pitt Spring & Mfg. Co., McKees Rocks, Pa.—Car Springs.
Foster Car Replacer & Supply Co., Stock Exchange Bldg., Chicago, Ill.—Replacing Frogs.
Fowler, Geo. L., 53 Broadway, New York.—Track Tools.
Fowler & Robert Mfg. Co., 1263 Atlantic Ave., Brooklyn, N. Y.—Fare Registers.
Frankford Steel Co., Frankford, Pa.—Axles.
Franklin Mfg. Co., Franklin, Pa.—Dust Guards.
Franklin Railway Supply Co., Franklin, Pa.—Brake Shoes, Journal Boxes, etc.
Franklin Steel Casting Co., Franklin, Pa.—Couplers and Draw Bars.
French, A., Spring Co., Pittsburg, Pa.—Nut Locks and Rail Joints.
Fulton Foundry Co., Marquette St. & L. S. & M. S. Ry., Cleveland, O.—Brake Shoes, Turn and Transfer Tables.
Garry Iron & Steel Co., Cleveland, O.—Wrecking Cars, Unloaders, etc.
General Electric Co., Schenectady, N. Y.—Electric Locomotives.
Georgia Car Co., Atlanta, Ga.—Logging and Plantation Cars.
Georgia Car Mfg. Co., Savannah, Ga.—Cars.
Globe Electric Mfg. Co., Cleveland, O.—Headlights.
Gold Car Heating & Lighting Co., 17 Battery Place, New York.—Car Heating and Lighting Apparatus.
Goodman Mfg. Co., Halsted St. & 48th Place, Chicago, Ill.—Electric Locomotives.
Goodwin Car Co., 96 Fifth Ave., New York.—Construction and Dump Cars.
Gould Coupler Co., 25 W. 33d St., New York.—Axles, Couplers and Draw Bars, etc.
Greenleaf Turntable Co., 2302 Boyd Ave., Indianapolis, Ind.—Turn and Transfer Tables.
Griffin Wheel Co., 138 Jackson Blvd., Chicago, Ill.—Car Wheels.
Gutta Percha & Rubber Mfg. Co., 96 Lake St., Chicago, Ill.—Air Brake Hose.
Hall Signal Co., 25 Broad St., New York.—Signals, etc.
Hammett, M. C., Troy, N. Y.—Locomotive Bell Ringers.

Ham Sand Box Co., Troy, N. Y.—Track Sanders.
Handlan-Buck Mfg. Co., 210-214 N. 3d St., St. Louis, Mo.—Headlights.
Handy Car Equipment Co., Old Colony Bldg., Chicago, Ill.—Cars, Couplers and Draw Bars, etc.
Harkins, T. B., Foundry Co., Bristol, Pa.—Brake Shoes.
Harman & Hassert, Bloomsburg, Pa.—Car Wheels.
Harrington, Edwin, Son & Co., Inc., 1511 Pennsylvania Ave., Philadelphia, Pa.—Turn and Transfer Tables.
Harrison Dust Guard Co., Toledo, O.—Dust Guards.
Harrison-Williams Co., Toledo, O.—Journal Lubricators.
Hart Steel Co., 137 Broadway, New York.—Tie Plates.
Haskell & Barker Car Co., Michigan City, Ind.—Brake Beams, Box and Dump Cars.
Hayes Track Appliance Co., Geneva, N. Y.—Derailing Devices.
Heil Rail Joint Welding Co., Milwaukee, Wis.—Rail Joints, Track Cleaners, etc.
Heitzmann Tool & Supply Co., Hoboken, N. J.—Replacing Frogs.
Helmbacher Forge & Rolling Mills Co., St. Louis, Mo.—Axles, Couplers and Draw Bars.
Herdon Compensation Tie Plate Co., Galeton, Pa.—Tie Plates.
Hewitt Mfg. Co., Monadnock Blk., Chicago, Ill.—Bearings.
Hicks, F. M., Locomotive & Car Works, 277 Dearborn St., Chicago, Ill.—Cars and Locomotives.
Hoffman Grain Door Co., Battle Creek, Mich.—Car Doors and Fittings.
Hoke Car Door & Fastener Co., Chambersburg, Pa.—Car Doors, Fittings, Seals, etc.
Holland Co., 77 Jackson Blvd., Chicago, Ill.—Flexible Joints, Journal Boxes.
Holman, D. F., Tracklayer Co., 140 Dearborn St., Chicago, Ill.—Track Laying Machines.
Hoopes & Townsend Co., 1330 Buttonwood St., Philadelphia, Pa.—Turnbuckles.
Hubbard & Co., Pittsburg, Pa.—Track Tools.
Huff Locomotive Appliance Co., Boston, Mass.—Track Sanders.
Hunt, C. W., Co., 45 Broadway, New York.—Dump Cars, Locomotives, etc.
Hutchins, C. B., & Sons, Majestic Bldg., Detroit, Mich.—Car Roofing.
Illinois Steel Co., The Rookery, Chicago, Ill.—Rails, Joints.
Independent Railway Supply Co., The Rookery, Chicago, Ill.—Rail Joints, Tie Plates, etc.
Indianapolis Switch & Frog Co., Springfield, O.—Frogs, Crossings, Switches, etc.
India Rubber Co., New Brunswick, N. J.—Air Brake Hose.
Industrial Works, Bay City, Mich.—Wrecking Cars, Turn and Transfer Tables.
Ingoldsby Automatic Car Co., Chemical Bldg., St. Louis, Mo.—Dump Cars.
International Register Co., 124 W. Jackson Blvd., Chicago, Ill. Fare Registers.
International Seal & Lock Co., Hastings, Mich.—Car Seals.
Iron City Tool Works, Ltd., Pittsburg, Pa.—Track Tools.
Jeffrey Mfg. Co., Columbus, O.—Electric Locomotives.
Jewett Car Co., Newark, O.—Passenger Cars.

Johns, H. W.-Manville Co., 100 William St., New York.—Car Heating and Lighting Apparatus.
Johnson, W. P., Co., 125 La Salle St., Chicago, Ill.—Cattle Guards.
Johnson Forge Co., Wilmington, Del.—Axles.
Johnson Wrecking Frog Co., 457 Prospect St., Cleveland, O.—Replacing Frogs.
Johnston Railroad Frog & Switch Co., Chester, Pa.—Frogs, Crossings, Switches, etc.
Jones, B. M., & Co., Boston, Mass.—Axles.
Jones, J. M., Sons, West Troy, N. Y.—Street Railway Cars.
Jones Car Door Co., Monadnock Blk., Chicago, Ill.—Car Door Fixtures.
Jones Positive Nut Lock Co., 2812 Wabash Ave., Chicago, Ill. Nut Locks.

Kalamazoo Railway Supply Co., Kalamazoo, Mich.—Hand Cars, Track Tools, etc.
Keith Mfg. Co., Sagamore, Mass.—Dump Cars.
Kelley Headlight Co., Rochester, N. Y.—Headlights.
Keystone Axle Co., Pittsburg, Pa.—Axles, Car Wheels, etc.
Keystone Car Wheel Co., Pittsburg, Pa.—Car Wheels.
Kilbourne & Jacobs Mfg. Co., Columbus, O.—Turn and Transfer Tables.
Kilby Locomotive & Machine Works, Anniston, Ala.—Axles, Cars, etc.
Kindl Car Truck Co., Merchants' Loan & Trust Bldg., Chicago, Ill.—Trucks.
King Bridge Co., Cleveland, O.—Turn and Transfer Tables.
Kinsey, E. A., Co., 331 W. 4th St., Cincinnati, O.—Fittings and Couplings.
Kirby Lumber & Equipment Co., Fisher Bldg., Chicago, Ill.—Dust Guards, Journal Boxes.
Knell Air Brake Mfg. Co., Ltd., Battle Creek, Mich.—Air Brakes.
Knowlson & Kelly, Troy, N. Y.—Light Locomotives.
Kuhlman, G. C., Car Co., Collinwood, O.—Street Railway Cars.

Lackawanna Iron & Steel Co., Scranton, Pa.—Rails.
Laconia Car Co. Works, 131 State St., Boston, Mass.—Cars, Trucks, etc.
Latrobe Steel & Coupler Co., 1200 Girard Bldg., Philadelphia, Pa.—Couplers, Draw Bars, etc.
Leavitt, C. W., & Co., 15 Cortlandt St., New York.—Turn and Transfer Tables.
Lehigh Car Wheel & Axle Works, Catasauqua, Pa.—Axles, Car Wheels, etc.
Lidgerwood Mfg. Co., 96 Liberty St., New York.—Ballast Unloaders.
Light Inspection Car Co., Hagerstown, Ind.—Inspection Cars.
Lima Locomotive & Machine Co., Lima, O.—Axles, Locomotives, etc.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.—Turn and Transfer Tables.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill. Coaling Chutes.
Little Giant Car Replacing Co., Buffalo, N. Y.—Replacing Frogs.
Lobdell Car Wheel Co., Wilmington, Del.—Axles, Car Wheels.
Logan Mfg. Co., Phoenixville, Pa.—Brake Shoes.

Lone Star Coupler Co., Franklin, Pa.—Couplers and Draw Bars.
Lorain Steel Co., Lorain, O.—Frogs, Crossings, Rails, etc.
Louisville Bridge & Iron Co., 11th & Oldham Sts., Louisville, Ky.—Turn and Transfer Tables.
Louisville Car Wheel & Railway Supply Co., Louisville, Ky.—Car Wheels.
Louisville Forge Co., Louisville, Ky.—Axles.
Lumen Bearing Co., Buffalo, N. Y.—Bearings.
McClintic-Marshall Construction Co., Pittsburg, Pa.—Turn and Transfer Tables.
McConway & Torley Co., 48th St. & A. V. Railway, Pittsburg, Pa.—Couplers, Draw Bars, etc.
McCord & Co., Old Colony Bldg., Chicago, Ill.—Dust Guards, Journal Boxes, etc.
McGuire Mfg. Co., 122 N. Sangamon St., Chicago, Ill.—Brakes, Car Fenders, etc.
Magann, G. P., Air Brake Co., Detroit, Mich.—Air Brakes.
Magnus Metal Co., Buffalo, N. Y.—Bearings.
Mann-McCann Co., Fisher Bldg., Chicago, Ill.—Track Throwing Machines, Ballast Spreaders, etc.
Manufacturing Co. of Carlisle, Carlisle, Pa.—Frogs, Crossings, Switches, etc.
Manufacturers' Railway Supply Co., Fisher Bldg., Chicago, Ill.—Brake Shoes.
Marion Steam Shovel Co., Marion, O.—Wrecking Cars, Unloaders, etc.
Maryland Car Wheel Works, 44 South St., Baltimore, Md.—Car Wheels.
Maryland Rail Co., Cumberland, Md.—Rails.
Massillon Bridge Co., Massillon, O.—Turn and Transfer Tables.
Mechanical Mfg. Co., Chicago, Ill.—Bumping Posts.
Mechanical Rubber Co., 230 Randolph St., Chicago, Ill.—Air Brake Hose.
Medric Co., 960 Rose Bldg., Cleveland, O.—Switch Stands.
Merrill-Stevens Mfg. Co., Kalamazoo, Mich.—Cattle Guards.
Michigan Bolt & Nut Co., Detroit, Mich.—Turnbuckles.
Middletown Car Works, Middletown, Pa.—Freight Cars, Trucks, etc.
Midland Railway Supply Co., Joliet, Ill.—Bearings.
Midvale Steel Co., Nicetown, Philadelphia, Pa.—Axles, Locomotive Tires, etc.
Miller Lock Co., Frankford, Philadelphia, Pa.—Switch Locks.
Millers Falls Co., Millers Falls, Mass.—Track Tools.
Milton Iron Co., Milton, Pa.—Axles.
Miner, W. H., 669-671 Rookery, Chicago, Ill.—Bearings, Draft Gear Attachments.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.—Car Movers.
Missouri Valley Bridge & Iron Works, Leavenworth, Kan.—Turn and Transfer Tables.
Moffett Railway Bearing Co., 291 Broadway, New York.—Bearings.
Mogul Claw Bar Co., Lawrence, Kan.—Frogs, Crossings, Claw Bars.
Monarch Supply Co., 135 Adams St., Chicago, Ill.—Bearings.
Moran Flexible Steam Joint Co., 142 3d St., Louisville, Ky.—Flexible Joints, Couplers and Draw Bars.

Moran Frog & Crossing Works, The Rookery, Chicago, Ill.—Frogs, Crossings, Switches, etc.
More-Jones Brass & Metal Co., St. Louis, Mo.—Bearings.
Morgan-Gardner Electric Co., Chicago, Ill.—Electric Locomotives.
Morgan Spring Co., Worcester, Mass.—Car Springs.
Morrill, Charles, 277 Broadway, New York.—Claw Bars.
Mt. Vernon Bridge Co., Mt. Vernon, O.—Turn and Transfer Tables.
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.—Cars, Car Wheels.
Mozier Safety Signal Co., Cleveland, O.—Signals.

National Car Coupler Co., 525 Monadnock Blk., Chicago, Ill.—Couplers, Draw Bars, etc.
National Car Protection Co., Colorado Springs, Col.—Car Seals.
National Car Wheel Co., Park Bldg., Pittsburg, Pa.—Car Wheels.
National Elastic Nut Co., Milwaukee, Wis.—Nut Locks.
National Electric Co., Milwaukee, Wis.—Air Brakes.
National Engineering & Supply Co., Inc., 120 Liberty St., New York.—Brakes.
National Fulton Brass Mfg. Co., Detroit, Mich.—Bearings.
National Malleable Castings Co., Cleveland, O.—Couplers, Draw Bars, etc.
National Railway Supply Co., Denver, Col.—Hand Cars.
National Surface Guard Co., The Rookery, Chicago, Ill.—Cattle Guards.
New Jersey Car Spring & Rubber Co., Jersey City, N. J.—Air Brake Hose.
New Jersey Foundry & Machine Co., 9 Murray St., New York. Cars.
New Jersey Steel Co., Bowling Green Bldg., New York.—Frogs, Crossings, Rail Joints, etc.
New York Air Brake Co., 66 Broadway, New York.—Air Brakes.
New York Belting & Packing Co., Ltd., 25 Park Place, New York.—Air Brake Hose.
New York Car Wheel Works, Buffalo, N. Y.—Car Wheels.
New York Electric Headlight & Train Lighting Co., 52 Broadway, New York.—Headlights.
New York Switch & Crossing Co., Hoboken, N. J.—Frogs, Crossings, Switches, etc.
Nichols, Geo. P., & Bro., Monadnock Blk., Chicago, Ill.—Turn and Transfer Tables.
Niles Car Works Co., Niles, O.—Cars.
Niles & Scott Co., La Porte, Ind.—Car Wheels.
Northern Engineering Works, Detroit, Mich.—Turn and Transfer Tables.

Ohio Brass Co., Mansfield, O.—Derailing Devices, etc.
Ohmer Fare Register Co., Dayton, O.—Fare Registers.
Otis Steel Co., Cleveland, O.—Axles.
Otto Gas Engine Works, 33d & Walnut Sts., Philadelphia, Pa. Railway Water Columns.

Paige Iron Works, Monadnock Blk., Chicago, Ill.—Frogs, Crossings, Switches, etc.
Parker & Topping, St. Paul, Minn.—Brake Shoes.
Parmenter, Geo. A., Cambridgeport, Mass.—Car Fenders.
Passaic Steel Co., Paterson, N. J.—Turn and Transfer Tables.

Peacock's Iron Works, Selma, Ala.—Car Wheels, Turn and Transfer Tables.
Peckham Mfg. Co., 26 Cortlandt St., New York.—Car Fenders, Trucks, etc.
Peerless Rubber Mfg. Co., 16 Warren St., New York.—Air Brake Hose.
Pencoyd Iron Works, 261 S. 4th St., Philadelphia, Pa.—Axles, Turn and Transfer Tables.
Penn Iron Co., Ltd., Lancaster, Pa.—Axles.
Pennsylvania Air Brake Co., Washington, Pa.—Air Brakes.
Pennsylvania Bridge Co., Beavers Falls, Pa.—Turn and Transfer Tables.
Pennsylvania Rubber Co., Jeannette, Pa.—Air Brake Hose.
Pennsylvania Steel Co., Steelton, Pa.—Frogs, Crossings, Switches, etc.
Peteler Portable Railway Mfg. Co., Minneapolis, Minn.—Dump Cars, Car Wheels.
Pettibone, Mulliken & Co., Marquette Bldg., Chicago, Ill.—Frogs, Crossings, Switches, etc.
Pfingst, Louis, 31 State St., Boston, Mass.—Car Fenders.
Phillips, Doup & Co., 159 Water St., Brooklyn, N. Y.—Hand Cars.
Phoenix Bridge Co., 410 Walnut St., Philadelphia, Pa.—Turn and Transfer Tables.
Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa.—Bearings.
Pilloid Co., Swanton, O.—Fittings and Couplings.
Pitt, Wm. R., Composite Iron Works, 111 Fifth Ave., New York.—Car Gates and Guards.
Pittsburg Forge & Iron Co., Pittsburg, Pa.—Axles.
Pittsburgh Spring & Steel Co., 1416-1417 Farmers' Bank Bldg., Pittsburg, Pa.—Car Springs, etc.
Pneumatic Gate Co., 149 E. Huron St., Chicago, Ill.—Crossing Gates, Derailing Devices.
Pneumatic Signal Co., Broad Exchange Bldg., New York.—Signaling Apparatus.
Porter, H. K., Co., Pittsburg, Pa.—Locomotives.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.—Couplers, Draw Bars, etc.
Pressed Steel Car Co., Pittsburg, Pa.—Cars, Trucks, etc.
Pritchard Pressed Steel Car Replacer Co., St. Paul, Minn.—Replacing Frogs.
Protected Rail Bond Co., Philadelphia, Pa.—Rail Bonds.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.—Electric Locomotives.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.—Passenger Cars, etc.
Pyle-National Electric Headlight Co., 1427 Monadnock Blk., Chicago, Ill.—Headlights.
Railroad Supply Co., 215 Dearborn St., Chicago, Ill.—Couplers, Draw Bars, Signals, etc.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.—Replacing Frogs, Snow Plows, etc.
Railway Commercial Seal Co., 185 Dearborn St., Chicago, Ill.—Car Seals.
Railway Journal Lubricating Co., 12th St. & St. Paul Ave., Milwaukee, Wis.—Journal Lubricators, etc.
Railway Register Mfg. Co., 1193 Broadway, New York.—Fare Registers.

Railway Steel Spring Co., 71 Broadway, New York.—Car Wheels, Springs, etc.
Ramapo Iron Works, Hillburn, N. Y.—Car Wheels, Frogs, Crossings, etc.
Red Star Co., Rochester, N. Y.—Headlights.
Rees, James, & Sons Co., Pittsburg, Pa.—Light Locomotives.
Reeves, Paul S., & Son, 1415 Catherine St., Philadelphia, Pa.—Bearings.
Republic Iron & Steel Co., 108 La Salle St., Chicago, Ill.—Rails, Turn and Transfer Tables, etc.
Republic Railway Appliances Co., Lincoln Trust Bldg., St. Louis, Mo.—Draft Gear and Draw Bar Attachments.
Risdon Iron & Locomotive Works, San Francisco, Cal.—Steam Locomotives, Car Wheels.
Roberts Car & Wheel Co., Three Rivers, Mich.—Hand Cars, Car Wheels.
Rochester Car Wheel Works, Rochester, N. Y.—Axles, Car Wheels.
Rodger Ballast Car Co., Railway Exchange Bldg., Chicago, Ill. Dump and Freight Cars.
Rogers Locomotive Works, Paterson, N. J.—Steam Locomotives.
Rogers Metal Works, Kansas City, Mo.—Bearings.
Rogers, M. M., & Co., 137 E. 26th St., Chicago, Ill.—Dust Guards.
Root Track Scraper Co., Kalamazoo, Mich.—Track Cleaners.
Ruffner, D. B., & Son, Schuylkill Falls, Philadelphia, Pa.—Nut Locks.
Rushmore Dynamo Works, Plainfield, N. J.—Headlights.
Russell Car & Snow Plow Co., Ridgway, Pa.—Freight Cars, Snow Plows, etc.
Russell Wheel & Foundry Co., Detroit, Mich.—Cars, Car Wheels, etc.
Ryan Dust Guard Co., Chicago, Ill.—Dust Guards.
Safety Car Heating & Lighting Co., 160 Broadway, New York. Car Heating and Lighting Apparatus.
Safety Switch & Signal Co., Battle Creek, Mich.—Signals, Switches, etc.
St. Albans Foundry, St. Albans, Vt.—Car Wheels.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.—Cars, Car Wheels, etc.
St. Louis Car Coupler Co., St. Louis, Mo.—Couplers and Draw Bars.
St. Louis Car Wheel Co., St. Louis, Mo.—Car Wheels.
St. Louis Register Co., St. Louis, Mo.—Fare Registers.
St. Paul Metal Co., St. Paul, Minn.—Bearings.
Savannah Locomotive Works & Supply Co., Savannah, Ga.—Trucks.
Sayen & Schultz, 21 N. 13th St., Philadelphia, Pa.—Air Brake Hose.
Schoen Steel Wheel Co., 170 Broadway, New York.—Car Wheels.
Schonthal Iron & Steel Co., Cumberland, Md.—Rails.
Schooley-McClure Co., McKeesport, Pa.—Torpedoes.
Schroeder Headlight Co., Evansville, Ind.—Headlights.
Scullin-Gallagher Iron & Steel Co., St. Louis, Mo.—Bolsters, Trucks, etc.
Sebring Forging Co., Sebring, O.—Turnbuckles.
Security Register Co., St. Louis, Mo.—Fare Registers.

Sellers, Wm., Co., Inc., 16th & Hamilton Sts., Philadelphia, Pa. Turn and Transfer Tables.
Sharon Steel Castings Co., Sharon, Pa.—Brake Shoes.
Sheffield Car Co., Three Rivers, Mich.—Cars, Car Wheels, etc.
Simonds Mfg. Co., Pittsburg, Pa.—Car Fenders.
Simplex Railway Appliance Co., Hammond, Ind.—Brake Beams, Car Springs, etc.
Sizer, W. S., Exchange St., ft. of Jefferson St., Buffalo, N. Y.—Axles.
Smart Car Door Co., Nashua, N. H.—Car Doors and Fittings.
Smillie Coupler & Mfg. Co., Newark, N. J.—Couplers and Draw Bars.
Smith, Peter, Heater Co., Detroit, Mich.—Car Heating and Lighting Apparatus.
Smith Car Door Co., Monadnock Blk., Chicago, Ill.—Car Door Fixtures.
Smith & Wallace, Woburn, Mass.—Car Gates and Guards.
Solid Steel Tool Co., Chicago, Ill.—Track Tools and Claw Bars.
Soule Raw Hide Lined Dust Guard Co., 173 Devonshire St., Boston, Mass.—Dust Guards.
South Baltimore Steel Car & Foundry Co., 44 South St., Baltimore, Md.—Dump Cars, Draft Gear and Draw Bar Attachments.
Southern Car & Foundry Co., Amidon, Ala.—Box Cars.
Spear & Miller Co., Monadnock Blk., Chicago, Ill.—Brake Shoes.
Spiral Journal Bearing Co., St. Louis, Mo.—Bearings.
Spiral Nut Lock Co., 143 Liberty St., New York.—Nut Locks.
Standard Car Truck Co., Old Colony Bldg., Chicago, Ill.—Trucks.
Standard Car Wheel Co., Cleveland, O.—Car Wheels.
Standard Coupler Co., 160 Broadway, New York.—Couplers, Draw Bars, etc.
Standard Paint Co., 100 William St., New York.—Car Roofing.
Standard Railway Gate Co., Saginaw, Mich.—Crossing Gates.
Standard Steel Car Co., Pittsburg, Pa.—Cars, Trucks, etc.
Standard Steel Works, 1103 Harrison Bldg., Philadelphia, Pa. Car Wheel Tires, etc.
Stanley Electric Mfg. Co., Pittsfield, Mass.—Electric Locomotives.
Star Headlight Co., Rochester, N. Y.—Headlights.
Stephenson, John Co., Ltd., 47 E. 27th St., New York.—Axles, Street Railway Cars.
Sterling-Meeker Co., 420-422 Ogden St., Newark, N. J.—Brakes, Fare Registers, etc.
Sterlingworth Railway Supply Co., N. American Bldg., Philadelphia, Pa.—Draft Gear and Draw Bar Attachments.
Storm Railway Signal Co., Waterloo, Ia.—Signals.
Strobel, C. L., Monadnock Blk., Chicago, Ill.—Turn and Transfer Tables.
Structural Steel Car Co., Canton, O.—Freight Cars.
Summers, E. W., Pittsburg, Pa.—Dump Cars.
Symington, T. H., & Co., 702 Fidelity Bldg., Baltimore, Md.—Dust Guards, Journal Boxes.
Taunton Locomotive Mfg. Co., Taunton, Mass.—Steam Locomotives, Snow Plows, etc.
Taylor Electric Truck Co., Troy, N. Y.—Electric Car Trucks.
Taylor Iron & Steel Co., High Bridge, N. J.—Car Wheels.
Taylor Signal Co., Buffalo, N. Y.—Signals.

Thacher, George H., & Co., Albany, N. Y.—Car Wheels.
Thompson, Charles A., 516 N. 3d St., St. Louis, Mo.—Frogs, Crossings, Switches.
Thompson, J., & Co., Van Horn & Sophia Sts., Philadelphia, Pa.—Railway Water Columns.
Tilden, B. E., Co., Manhattan Bldg., Chicago, Ill.—Replacing Frogs.
Tippett & Wood, Phillipsburg, N. J.—Turn and Transfer Tables.
Transue & Williams Co., Alliance, O.—Brake Shoes.
Trenton Iron Co., Trenton, N. J.—Turn and Transfer Tables.
Trojan Car Coupler Co., 500 Fifth Ave., New York.—Couplers and Draw Bars.
Troy Malleable Iron Co., Troy, N. Y.—Couplers and Draw Bars.
Union Drop Forge Co., 64-76 E. Ohio St., Chicago, Ill.—Claw Bars.
Union Iron Works Co., Selma, Ala.—Brake Shoes, Logging Cars.
Union Rail Co., Huntington, W. Va.—Rails.
Union Spring & Mfg. Co., New Kensington, Pa.—Car Springs.
Union Switch & Signal Co., Swissvale, Pa.—Frogs, Crossings, Switches, etc.
United & Globe Rubber Mfg. Co., Trenton, N. J.—Air Brake Hose.
United States Foundry & Supply Co., 77 Jackson Blvd., Chicago, Ill.—Brake Shoes.
United States Metal & Mfg. Co., 25 Broad St., New York.—Car Doors.
United States Metallic Packing Co., 427 N. 13th St., Philadelphia, Pa.—Locomotive Bell Ringers.
United States Railway Signal & Supply Co., Fostoria, O.—Torpedoes.
United States Steel Co., West Everett, Mass.—Air Brakes.
United States Wind Engine & Pump Co., Batavia, Ill.—Railway Water Columns.
Universal Car Bearing Co., 11 Broadway, New York.—Bearings.
Upson Nut Co., Cleveland, O.—Nut Locks.
Utica Headlight Co., Utica, N. Y.—Headlights.
Van Dorn, W. T., Co., Monadnock Blk., Chicago, Ill.—Couplers, Draw Bars, etc.
Van Dorn & Dutton Co., 1796 E. Madison Ave., Cleveland, O.—Turn and Transfer Tables, etc.
Verona Tool Works, Murtland Bldg., Pittsburg, Pa.—Nut Locks, Track Tools, etc.
Virginia Bridge & Iron Co., Roanoke, Va.—Turn and Transfer Tables.
Vogan Bros. Mfg. Co., New Castle, Pa.—Car Gates and Guards.
Volute Lock Co., Fort Wayne, Ind.—Nut Locks.
Vose Spring Co., 115 Broadway, New York.—Car Springs.
Vulcan Iron Works, Wilkesbarre, Pa.—Locomotives.
Vulcanus Forging Co., 965 Hamilton St., Cleveland, O.—Turn and Transfer Tables.
Wagner-Palmros Mfg. Co., Fairmont, W. Va.—Electric Locomotives.
Walker Car Replacer Co., St. Paul, Minn.—Replacing Frogs.
Walsh Brake Shoe Co., Old Colony Bldg., Chicago, Ill.—Brake Shoes.

Walters, J. H., Augusta, Ga.—Track Sanders.
Ward, E. J., Co., 100 Lake St., Chicago, Ill.—Car Diaphragms.
Washburn Co., Guaranty Bldg., Minneapolis, Minn.—Couplers, Draw Bars, etc.
Wason Mfg. Co., Springfield, Mass.—Passenger Cars, Car Wheels, etc.
Weber Railway Joint Mfg. Co., 71 Broadway, New York.—Rail Braces and Joints.
Weir Frog Co., Front, Smith & Water Sts., Cincinnati, O.—Frogs, Crossings, Switches, etc.
Wellman-Seaver-Morgan Co., Cleveland, O.—Draft Gear and Draw Bar Attachments.
West, Francis T., The Rookery, Chicago, Ill.—Cattle Guards.
Western Railway Equipment Co., Missouri Trust Bldg., St. Louis, Mo.—Car Doors and Fittings, etc.
Western Railway Signal Co., Fostoria, O.—Torpedoes.
Western Steel Car & Foundry Co., Old Colony Bldg., Chicago, Ill.—Cars.
Western Wheeled Scraper Co., Aurora, Ill.—Dump Cars.
Westinghouse Air Brake Co., Pittsburg, Pa.—Air Brakes, etc.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.—Electric Locomotives.
Westinghouse Machine Co., Pittsburg, Pa.—Electric Locomotives.
Whall, C. H., & Co., 170 Summer St., Boston, Mass.—Torpedoes.
Wharton, Wm., Jr., & Co., Inc., 308 Walnut St., Philadelphia, Pa.—Car Wheels, Frogs, Crossings, etc.
Wheel Truing Brake Shoe Co., Detroit, Mich.—Brake Shoes.
Whiting Foundry Equipment Co., Harvey, Ill.—Turn and Transfer Tables.
Whitney Car Wheel Works, 901 Montgomery Ave., Philadelphia, Pa.—Axles, Car Wheels, etc.
Williams, White & Co., Moline, Ill.—Locomotive Coaling Chutes.
Wilson Railway Gate Co., Birmingham, Mich.—Crossing Gates.
Wisconsin Bridge & Iron Co., Pabst Bldg., Milwaukee, Wis.—Turn and Transfer Tables.
Wonham & Magor Engineering Works, 29 Broadway, New York.—Switches, Turn and Transfer Tables, etc.
Wood Mfg. Co., Fostoria, O.—Torpedoes.
Woodman, R., Mfg. & Supply Co., 63 Oliver St., Boston, Mass. Car Movers.
Woods, Edwin S., Monadnock Blk., Chicago, Ill.—Bearings.

RAILWAY EQUIPMENT.

1. ROLLING STOCK EQUIPMENT.

2 AXLES.

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Baltimore Railway Specialty Co., Calvert Bldg., Baltimore.
Bethlehem Steel Co., South Bethlehem, Pa.
Block-Pollak Iron Co., Cincinnati, O.
Boston Forge Co., 340 Maverick St., East Boston, Mass.
Bradley, O., & Sons, Worcester, Mass.
Cambria Steel Co., Arcade Bldg., 15th & Market Sts., Philda.
Carbon Steel Co., Pittsburg, Pa.
Cayuta Wheel & Foundry Co., Sayre, Pa.
Cleveland City Forge & Iron Co., Cleveland, O.
DeLaney Forge & Iron Co., 306 Perry St., Buffalo, N. Y.
Dorner Truck & Foundry Co., Logansport, Ind.
Eastern Forge Co., Nashua, N. H.
Frankford Steel Co., Frankford, Pa.
Gould Coupler Co., 25 W. 33d St., New York.
Helmbacher Forge & Rolling Mills Co., St. Louis, Mo.
Johnson Forge Co., Wilmington, Del.
Jones, B. M., & Co., Boston, Mass.
Keystone Axle Co., Pittsburg, Pa.
Kilby Locomotive & Machine Works, Anniston, Ala.
Lehigh Car Wheel & Axle Works, Catasauqua, Pa.
Lima Locomotive & Machine Co., Lima, O.
Lobdell Car Wheel Co., Wilmington, Del.
Louisville Forge Co., Louisville, Ky.
Midvale Steel Co., Nicetown, Philadelphia, Pa.
Milton Iron Co., Milton, Pa.
Otis Steel Co., Cleveland, O.
Pencoyd Iron Works, 261 S. 4th St., Philadelphia, Pa.
Penn Iron Co., Ltd., Lancaster, Pa.
Pennsylvania Steel Co., Steelton, Pa.
Pittsburg Forge & Iron Co., Pittsburg, Pa.
Rochester car Wheel Works, Rochester, N. Y.
Russell Wheel & Foundry Co., Detroit, Mich.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Sheffield Car Co., Three Rivers, Mich.
Sizer, W. S., Exchange St., foot of Jefferson St., Buffalo, N. Y.
Stephenson, John, Co., Ltd., 47 E. 47th St., New York.
Whiting Car Wheel Works, 901 Montgomery Ave., Philda.

3 BEARINGS, SIDE, CENTRE, JOURNAL, ETC.

Blocks of metal on which the load rests.

Ajax Metal Co., 46-52 Richmond St., Philadelphia, Pa.
Anti Friction Bearing Co., Pittsburg, Pa.
Atlantic Brass Co., 192 Broadway, New York.
Aurora Metal Co., Aurora, Ill.
Brady Brass Co., Jersey City, N. J.

BEARINGS, continued

Camel Co., Old Colony Bldg., Chicago, Ill.
Chicago Brass & Copper Works, Monadnock Blk., Chicago, Ill.
Damascus Bronze Co., Pittsburg, Pa.
Hewitt Mfg. Co., Monadnock Blk., Chicago, Ill.
Lumen Bearing Co., Buffalo, N. Y.
Magnus Metal Co., Buffalo, N. Y.
Midland Railway Supply Co., Joliet, Ill.
Miner, W. H., 669-671 Rookery, Chicago, Ill.
Moffett Railway Bearing Co., 291 Broadway, New York.
Monarch Supply Co., 135 Adams St., Chicago, Ill.
More-Jones Brass & Metal Co., St. Louis, Mo.
National-Fulton Brass Mfg. Co., Detroit, Mich.
Phosphor-Bronze Smelting Co., 2200 Washington Ave., Philda.
Reeves, Paul S., & Son, 1415 Catherine St., Philadelphia, Pa.
Rogers Metal Works, Kansas City, Mo.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
St. Paul Metal Co., St. Paul, Minn.
Spiral Journal Bearing Co., St. Louis, Mo.
Universal Car Bearing Co., 11 Broadway, New York.
Woods, Edwin S., Monadnock Blk., Chicago, Ill.

4 **BELL RINGERS, LOCOMOTIVE.**

Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Hammett, M. C., Troy, N. Y.
United States Metallic Packing Co., 427 N. 13th St., Philda.
Western Railway Equipment Co., Missouri Trust Bldg., St. Louis, Mo.

5 **BOLSTERS, BODY AND TRUCK.** Cross beams which support the body of a car or a truck.

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
American Steel Foundries, 74 Broadway, New York.
Barney & Smith Car Co., Dayton, O.
Bettendorf Axle Co., Davenport, Ia.
Buckeye Steel Castings Co., Columbus, O.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
Commonwealth Railway Supply Co., Monadnock Blk., Chicago, Ill.
Commonwealth Steel Co., Bank of Commerce Bldg., St. Louis, Mo.
Buffalo Brake Beam Co., Buffalo, N. Y.
Pressed Steel Car Co., Pittsburg, Pa.
Scullin-Gallagher Iron & Steel Co., St. Louis, Mo.
Simplex Railway Appliance Co., Hammond, Ind.
Standard Steel Car Co., Pittsburg, Pa.
Sterlingworth Railway Supply Co., North American Bldg., Philadelphia, Pa.
Structural Steel Car Co., Canton, O.
Wellman-Seaver-Morgan Co., Cleveland, O.

6 **BRAKES AND ATTACHMENTS.**

7 **Brake Beams.** Transverse bars to which the brake blocks and shoes are attached.

Bettendorf Axle Co., Davenport, Ia.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.

BRAKE BEAMS, continued

Buffalo Brake Beam Co., Buffalo, N. Y.
Chicago Railway Equipment Co., 40th St. & Princeton Ave., Chicago, Ill.
Commonwealth Railway Supply Co., Monadnock Blk., Chicago, Ill.
Damascus Brake Beam Co., St. Louis, Mo.
Dexter Mfg. Co., St. Louis, Mo.
Diamond State Car Spring Co., Wilmington, Del.
Haskell & Barker Car Co., Michigan City, Ind.
Pressed Steel Car Co., Pittsburg, Pa.
Simplex Railway Appliance Co., Hammond, Ind.
Standard Steel Car Co., Pittsburg, Pa.

8 **Brake Shoes.** That part of the brake which presses on the wheel.

Allston Foundry Co., 620 Atlantic Ave., Boston, Mass.
American Brake Shoe & Foundry Co., 170 Broadway, N. Y.
American Steel Casting Co., Thurlow, Pa.
Barbour-Stockwell Co., Cambridgeport, Mass.
Barnum, Richardson, Co., Lime Rock, Conn.
Buckeye Steel Castings Co., Columbus, O.
Chester Steel Castings Co., 407 Sansom St., Philadelphia, Pa.
Columbus Iron Works Co., Columbus, Ga.
Commonwealth Railway Supply Co., Monadnock Blk., Chicago, Ill.
Crescent Brake Shoe Co., 125 Hudson St., Philadelphia, Pa.
Franklin Railway Supply Co., Franklin, Pa.
Fulton Foundry Co., Marquette St. & L. S. & M. S. Ry., Cleveland, O.
Harkins, T. B., Foundry Co., Bristol, Pa.
Logan Mfg. Co., Phoenixville, Pa.
Manufacturers' Railway Supply Co., Fisher Bldg., Chicago, Ill.
Middletown Car Works, Middletown, Pa.
New Jersey Steel Co., Bowling Green Bldg., New York.
Parker & Topping, St. Paul, Minn.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.
Russell Wheel & Foundry Co., Detroit, Mich.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Sharon Steel Castings Co., Sharon, Pa.
Spear & Miller Co., Monadnock Blk., Chicago, Ill.
Transue & Williams Co., Alliance, O.
Union Iron Works Co., Selma, Ala.
United States Foundry & Supply Co., 77 Jackson Blvd., Chicago, Ill.
Walsh Brake Shoe Co., Old Colony Bldg., Chicago, Ill.
Wharton, Wm., Jr., & Co., Inc., 308 Walnut St., Philadelphia.
Wheel Truing Brake Shoe Co., Detroit, Mich.

9 **Brakes.** For retarding or arresting the motion of wheels.

Consolidated Railway Electric Lighting & Equipment Co., 11 Pine St., New York.
Flood, P., Albany, N. Y.
McGuire Mfg. Co., 122 N. Sangamon St., Chicago, Ill.
National Engineering & Supply Co., Inc., 120 Liberty St., N. Y.
Sterling-Meaker Co., 420-422 Ogden St., Newark, N. J.
United States Steel Co., West Everett, Mass.

BRAKES, continued

10 AIR. In which compressed air is the motive power.

Carrington Air Brake Co., Matteawan, N. Y.
Knell Air Brake Mfg. Co., Ltd., Battle Creek, Mich.
Magann, G. P., Air Brake Co., Detroit, Mich.
National Electric Co., Milwaukee, Wis.
New York Air Brake Co., 66 Broadway, New York.
Pennsylvania Air Brake Co., Washington, Pa.
United States Steel Co., West Everett, Mass.
Westinghouse Air Brake Co., Pittsburg, Pa.

11 **Fittings and Couplings, Air Brake.**

Baker, Jas. H., Mfg. Co., 2324 Farmers Bank Bldg., Pittsburg.
Consolidated Car Heating Co., 413-423 N. Pearl St., Albany, N. Y.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Dayton Malleable Iron Co., Dayton, O.
Flagg, Stanley G., & Co., 424 N. 19th St., Philadelphia, Pa.
Kinsey, E. A., Co., 331 W. 4th St., Cincinnati, O.
Pilloid Co, Swanton, O.
Safety Car Heating & Lighting Co., 160 Broadway, New York.
Westinghouse Air Brake Co., Pittsburg, Pa.

12 FLEXIBLE JOINTS. Pipe connections of metal which permit a limited amount of motion between the connected parts.

Franklin Railway Supply Co., Franklin, Pa.
Holland Co., 77 Jackson Blvd., Chicago, Ill.
Moran Flexible Steam Joint Co., Inc., 142 3d St., Louisville, Ky.

13 **Hose, Air Brake.**

Boston Belting Co., 256 Devonshire St., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridgeport, Mass.
Diamond Rubber Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., 96 Lake St., Chicago, Ill.
India Rubber Co., New Brunswick, N. J.
Mechanical Rubber Co., 230 Randolph St., Chicago, Ill.
New Jersey Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., Ltd., 25 Park Place, N. Y.
Peerless Rubber Mfg. Co., 16 Warren St., New York.
Pennsylvania Rubber Co., Jeannette, Pa.
Sayen & Schultz, 21 N. 13th St., Philadelphia, Pa.
United & Globe Rubber Mfg. Co., Trenton, N. J.

14 **BUFFERS.** Beams or plates acting horizontally on springs attached to the end of a railroad car.

Gould Coupler Co., 25 W. 33d St., New York.
National Car Coupler Co., 525 Monadnock Blk., Chicago, Ill.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.
Washburn Co., Guaranty Bldg., Minneapolis, Minn.
Westinghouse Air Brake Co., Pittsburg, Pa.

15 **CAR DIAPHRAGMS.**

Boston Belting Co., 256 Devonshire St., Boston, Mass.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Ward, E. J., Co., 100 Lake St., Chicago, Ill.

16 CAR DOORS AND FITTINGS.

Camel Co., Old Colony Building, Chicago, Ill.
Chicago Grain Door Co., 931 Monadnock Blk., Chicago, Ill.
Hoffman Grain Door Co., Battle Creek, Mich.
Hoke Car Door & Fastener Co., Chambersburg, Pa.
Jones Car Door Co., Monadnock Blk., Chicago, Ill.
McGuire Mfg. Co., 122 N. Sangamon St., Chicago, Ill.
Smart Car Door Co., Nashua, N. H.
Smith Car Door Co., Monadnock Blk., Chicago, Ill.
United States Metal & Mfg. Co., 25 Broad St., New York.
Western Railway Equipment Co., Missouri Trust Bldg., St. Louis, Mo.

17 CAR FENDERS.

Baltimore Car Wheel Co., Patterson Ave. & Payson St., Baltimore, Md.
Brill, J. G., Co., 62d St. and Woodland Ave., Philadelphia, Pa.
Consolidated Car Fender Co., Providence, R. I.
Dunning, Edw. L., Co., 64 Federal St., Boston, Mass.
Eclipse Car Fender Co., Cleveland, Ohio.
McGuire Mfg Co., 122 No. Sangamon St., Chicago, Ill.
Parmenter, Geo. A., Cambridgeport, Mass.
Peckham Mfg. Co., 26 Cortlandt St., New York.
Pfingst, Louis, 31 State St., Boston, Mass.
Simonds Mfg. Co., Pittsburg, Pa.

18 CAR GATES AND GUARDS.

For closing the entrances to car platforms.

Bliss, R., Mfg. Co., Pawtucket, R. I.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
Brownell Car Co., 2300 N. Broadway, St. Louis, Mo.
Pitt, Wm. R., Composite Iron Works, 111 Fifth Ave., New York.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Smith & Wallace, Woburn, Mass.
Vogan Bros. Mfg. Co., New Castle, Pa.

19 CAR HEATING AND LIGHTING APPARATUS.

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
Baker, W. C., 143 Liberty St., New York.
Bay State Electric Heat & Light Co., 89 State St., Boston.
Brill, J. G., 62d St. & Woodland Ave., Philadelphia, Pa.
Chicago Car Heating Co., Chicago, Ill.
Consolidated Car Heating Co., 413-423 N. Pearl St., Albany.
Consolidated Railway Electric Lighting & Equipment Co., 11 Pine St., New York.
Economy Car Heating Co., Portland, Me.
Gold Car Heating & Lighting Co., 17 Battery Pl., New York.
Johns-Manville, H. W., Co., 100 William St., New York.
Safety Car Heating & Lighting Co., 160 Broadway, New York.
Smith, Peter, Heater Co., Detroit, Mich.

20 CAR PLATFORMS.

National Car Coupler Co., 525 Monadnock Block, Chicago, Ill.
Standard Coupler Co., 160 Broadway, New York.

21 CAR ROOFING.

Bird, F. W., & Son, East Walpole, Mass.
Cortright Metal Roofing Co., 50 N. 23d St., Philadelphia, Pa.

CAR ROOFING, continued

Excelsior Car Roof Co., Chemical Bldg., St. Louis, Mo.
Garry Iron & Steel Co., Cleveland, O.
Hutchins, C. B., & Sons, Majestic Bldg., Detroit, Mich.
Johns, H. W.-Manville Co., 100 William St., New York.
Standard Paint Co., 100 William St., New York.

22 **CAR SEALS.** For securing freight car doors.

American Refining & Smelting Co., Cincinnati, O.
Bitner, C. W., Car Equipment Co., Terre Haute, Ind.
Buffalo Seal & Press Co., Hudson & 7th Sts., Buffalo, N. Y.
Camel Co., Old Colony Bldg., Chicago, Ill.
Dayton Malleable Iron Co., Dayton, O.
Edgar Car Lock & Seal Co., Iola, Kan.
Hoke Car Door & Fastener Co., Chambersburg, Pa.
International Seal & Lock Co., Hastings, Mich.
National Car Protection Co., Colorado Springs, Col.
Railway Commercial Seal Co., 185 Dearborn St., Chicago, Ill.

23 **CAR VESTIBULES.**

Gould Coupler Co., 25 W. 33d St., New York.
McConway & Torley Co., 48th St. & A. V. Railway, Pittsburg, Pa.

24 **CARS.**

25 **Box.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Barney & Smith Car Co., Dayton, O.
Chicago Car & Locomotive Works, Fisher Bldg., Chicago, Ill.
Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.
Georgia Car Mfg. Co., Savannah, Ga.
Handy Car Equipment Co., Old Colony Bldg., Chicago, Ill.
Haskell & Barker Car Co., Michigan City, Ind.
Niles Car Works Co., Niles, O.
Sheffield Car Co., Three Rivers, Mich.
Southern Car & Foundry Co., Amidon, Ala.
Western Steel Car & Foundry Co., Old Colony Bldg., Chicago.
Pressed Steel Car Co., Pittsburg, Pa.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.

26 **Construction.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Buda Foundry & Mfg. Co., Monadnock Blk, Chicago, Ill.
Goodwin Car Co., 96 Fifth Ave., New York.
Georgia Car Mfg. Co., Savannah, Ga.
New Jersey Foundry & Machine Co., 9 Murray St., N. Y.
Sheffield Car Co., Three Rivers, Mich.

27 **Dump.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Caswell Car Co., Fisher Bldg., Chicago, Ill.
Catawissa Car & Foundry Co., Catawissa, Pa.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.
Chicago Car & Locomotive Works, Fisher Bldg., Chicago, Ill.
Cleveland Car Co., West Park, O.

DUMP CARS, continued

Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.
Goodwin Car Co., 96 Fifth Ave., New York.
Haskell & Barker Car Co., Michigan City, Ind.
Hunt, C. W., Co., 45 Broadway, New York.
Ingoldsby Automatic Car Co., Chemical Bldg., St. Louis, Mo.
Keith Mfg. Co., Sagamore, Mass.
Laconia Car Co. Works, 131 State St., Boston, Mass.
New Jersey Foundry & Machine Co., 9 Murray St., N. Y.
Peteler Portable Railway Mfg. Co., Minneapolis, Minn.
Pressed Steel Car Co., Pittsburg, Pa.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.
Rodger Ballast Car Co., Railway Exchange Bldg., Chicago.
Russell Car & Snow Plow Co., Ridgway, Pa.
Russell Wheel & Foundry Co., Detroit, Mich.
South Baltimore Steel Car & Foundry Co., 44 South St., Baltimore, Md.
Sheffield Car Co., Three Rivers, Mich.
Standard Steel Car Co., Pittsburg, Pa.
Summers, E. W., Pittsburg, Pa.
Western Wheeled Scraper Co., Aurora, Ill.
Western Steel Car & Foundry Co., Old Colony Bldg., Chicago.

28 **Freight.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
American Steel Foundries, 74 Broadway, New York.
Bettendorf Axle Co., Davenport, Ia.
California Car Works, San Francisco, Cal.
Erie Car Works, Erie, Pa.
Chicago Car & Locomotive Works, Fisher Bldg., Chicago, Ill.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.
Caswell Car Co., Fisher Bldg., Chicago, Ill.
Georgia Car Mfg. Co., Savannah, Ga.
Laconia Car Co. Works, 131 State St., Boston, Mass.
Middletown Car Works, Middletown, Pa.
Hicks, F. M., Locomotive & Car Works, 277 Dearborn St., Chicago, Ill.
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.
Pressed Steel Car Co., Pittsburg, Pa.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.
Russell Car & Snow Plow Co., Ridgway, Pa.
Rodger Ballast Car Co., Railway Exchange Bldg., Chicago, Ill.
Standard Steel Car Co., Pittsburg, Pa.
Structural Steel Car Co., Canton, O.
Western Steel Car & Foundry Co., Old Colony Bldg., Chicago.

29 **Hand, Inspection and Push.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Light Inspection Car Co., Hagerstown, Ind.
National Railway Supply Co., Denver, Col.
Phillips, Doup & Co., 159 Water St., Brooklyn, N. Y.
Roberts Car & Wheel Co., Three Rivers, Mich.
Sheffield Car Co., Three Rivers, Mich.

CARS, continued

30 **Logging.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Butterworth & Lowe, Grand Rapids, Mich.
Catawissa Car & Foundry Co., Catawissa, Pa.
Chicago Car & Locomotive Works, Fisher Bldg., Chicago, Ill.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Georgia Car Co., Atlanta, Ga.
Kilby Locomotive & Machine Works, Anniston, Ala.
New Jersey Foundry & Machine Co., 9 Murray St., N. Y.
Lima Locomotive & Machine Co., Lima, O.
Russell Wheel & Foundry Co., Detroit, Mich.
Sheffield Car Co., Three Rivers, Mich.
Union Iron Works Co., Selma, Ala.
Western Steel Car & Foundry Co., Old Colony Bldg., Chicago.

31 **Passenger.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
Barney & Smith Car Co., Dayton, O.
Bradley, O., & Sons, Worcester, Mass.
Hicks, F. M., Locomotive and Car Works, 277 Dearborn St., Chicago.
Jewett Car Co., Newark, O.
Laconia Car Co. Works, 131 State St., Boston, Mass.
Niles Car Works Co., Niles, O.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Wason Mfg. Co., Springfield, Mass.

32 STREET RAILWAY.

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Barney & Smith Car Co., Dayton, O.
Bradley, O., & Sons, Worcester, Mass.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
California Car Works, San Francisco, Cal.
Jewett Car Co., Newark, O.
Jones, J. M., Sons, West Troy, N. Y.
Kuhlman, G. C., Car Co., Collinwood, O.
Laconia Car Co. Works, 131 State St., Boston, Mass.
Niles Car Works Co., Niles, O.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Stephenson, John, Co., Ltd., 47 E. 27th St., New York.

33 **Plantation.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.
Georgia Car Co., Atlanta, Ga.
Kilby Locomotive & Machine Works, Anniston, Ala.
New Jersey Foundry & Machine Co., 9 Murray St., N. Y.
Ramapo Iron Works, Hillburn, N. Y.
Pressed Steel Car Co., Pittsburg, Pa.
Sheffield Car Co., Three Rivers, Mich.
Standard Steel Car Co., Pittsburg, Pa.
Western Steel Car & Foundry Co., Old Colony Bldg., Chicago.

CARS, continued

34 **Refrigerator.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Erie Car Works, Erie, Pa.
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.
Pullman Co., Michigan Ave. & Adams St., Chicago, Ill.
Western Steel Car & Foundry Co., Old Colony Bldg., Chicago.

35 **Velocipede.** See 29. Hand, Inspection and Push Cars.

36 **Wrecking.**

Bucyrus Co., South Milwaukee, Wis.
Garry Iron & Steel Co., Cleveland, O.
Industrial Works, Bay City, Mich.
Marion Steam Shovel Co., Marion, O.

37 **COUPLERS AND DRAW BARS.** For coupling or connecting cars, a car and a locomotive, etc.

American Steel Foundries, 74 Broadway, New York.
Buckeye Steel Castings Co., Columbus, O.
Butler Draw Bar Attachment Co., Cleveland, O.
Commonwealth Steel Co., Bank of Commerce Bldg., St. Louis.
Davis & Bryan, Philadelphia, Pa.
Dayton Malleable Iron Co., Dayton, O.
Erie Car Works, Erie, Pa.
Forsyth Automatic Air & Steam Coupler Co., The Rookery, Chicago, Ill.
Franklin Railway Supply Co., Franklin, Pa.
Franklin Steel Casting Co., Franklin, Pa.
Gould Coupler Co., 25 W. 33d St., New York.
Handy Car Equipment Co., Old Colony Bldg., Chicago, Ill.
Helmbacher Forge & Rolling Mills Co., St. Louis, Mo.
Latrobe Steel & Coupler Co., 1200 Girard Bldg., Philda.
Lone Star Coupler Co., Franklin, Pa.
McConway & Torley Co., 48th St. & A. V. Railway, Pittsburg, Pa.
Moran Flexible Steam Joint Co., Inc., 142 3d St., Louisville, Ky.
National Car Coupler Co., 525 Monadnock Blk., Chicago, Ill.
National Malleable Castings Co., Cleveland, O.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.
Railway Supply Co., 215 Dearborn St., Chicago, Ill.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
St. Louis Car Coupler Co., St. Louis, Mo.
Smillie Coupler & Mfg. Co., Newark, N. J.
Standard Coupler Co., 160 Broadway, New York.
Trojan Car Coupler Co., 500 Fifth Ave., New York.
Troy Malleable Iron Co., Troy, N. Y.
Van Dorn, W. T., Co., Monadnock Blk., Chicago, Ill.
Washburn Co., Guaranty Bldg., Minneapolis, Minn.

38 **DRAFT GEAR AND DRAW BAR ATTACHMENTS.**

Butler Draw Bar Attachment Co., Cleveland, O.
Dayton Malleable Iron Co., Dayton, O.
Franklin Railway Supply Co., Franklin, Pa.
Gould Coupler Co., 25 W. 33d St., New York.
Miner, W. H., 669-671 The Rookery, Chicago, Ill.
National Car Coupler Co., 525 Monadnock Blk., Chicago, Ill.

DRAW BAR ATTACHMENTS, continued

Republic Railway Appliances Co., Lincoln Trust Bldg., St. Louis, Mo.
South Baltimore Steel Car & Foundry Co., 44 South St., Baltimore, Md.
Standard Coupler Co., 160 Broadway, New York.
Sterlingworth Railway Supply Co., North American Bldg., Philadelphia, Pa.
Van Dorn, W. T., Co., Monadnock Blk., Chicago, Ill.
Washburn Co., Guaranty Bldg., Minneapolis, Minn.
Wellman-Seaver-Morgan Co., Cleveland, O.
Western Railway Equipment Co., Missouri Trust Bldg., St. Louis, Mo.
Westinghouse Air Brake Co., Pittsburg, Pa.

39 **DUST GUARDS.** For journal boxes.

American Dust Guard Co., Columbus, O.
Franklin Mfg. Co., Franklin, Pa.
Harrison Dust Guard Co., Toledo, O.
Kirby Lumber & Equipment Co., Fisher Bldg., Chicago, Ill.
McCord & Co., Old Colony Bldg., Chicago, Ill.
Railway Journal Lubricating Co., 12th St. & St. Paul Ave., Milwaukee, Wis.
Ryan Dust Guard Co., Chicago, Ill.
Soule Raw Hide Lined Dust Guard Co., 113 Devonshire St., Boston, Mass.
Symington, T. H., & Co., 702 Fidelity Bldg., Baltimore, Md.

40 **GRAIN DOORS.** See 16, Car Doors and Fittings.

41 **HEADLIGHTS.**

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
Crouse-Hinds Electric Co., Syracuse, N. Y.
Dayton Mfg. Co., Dayton, O.
Dressel Railway Lamp Works, 3876 Park Ave., New York.
Dietz, R. E., & Co., 35 Laight St., New York.
Edward Railroad Electric Light Co., Monadnock Blk., Chicago, Ill.
Globe Electric Mfg. Co., Cleveland, O.
Handlan-Buck Mfg. Co., 210-214 N. 3d St., St. Louis, Mo.
Kelley Headlight Co., Rochester, N. Y.
New York Electric Headlight & Train Lighting Co., 52 Broadway, New York.
Pyle National Electric Headlight Co., 1427 Monadnock Blk., Chicago, Ill.
Red Star Co., Rochester, N. Y.
Rushmore Dynamo Works, Plainfield, N. J.
Schroeder Headlight Co., Evansville, Ind.
Star Headlight Co., Rochester, N. Y.
Utica Headlight Co., Utica, N. Y.

42 **JOURNAL BOXES.** For enclosing journal bearings.

American Brake Shoe & Foundry Co., 170 Broadway, N. Y.
Dayton Malleable Iron Co., Dayton, O.
Franklin Railway Supply Co., Franklin, Pa.
Gould Coupler Co., 25 W. 33d St., New York.
Holland Co., 77 Jackson Blvd., Chicago, Ill.
Kirby Lumber & Equipment Co., Fisher Bldg., Chicago, Ill.

JOURNAL BOXES, continued

McCord & Co., Old Colony Bldg., Chicago, Ill.
National Malleable Castings Co., Cleveland, O.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.
Railway Steel Spring Co., 71 Broadway, New York.
Symington, T. H., & Co., 702 Fidelity Bldg., Baltimore, Md.
Wellman-Seaver-Morgan Co., Cleveland, O.

43 LOCOMOTIVES.

44 . Compressed Air.

American Locomotive Co., 25 Broad St., New York.
Baldwin Locomotive Works, 500 N. Broad St., Philadelphia.
Porter, H. K., Co., Pittsburg, Pa.

45 Electric.

American Locomotive Co., 25 Broad St., New York.
Baldwin Locomotive Works, 500 N. Broad St., Philadelphia.
General Electric Co., Schenectady, N. Y.
Goodwin Mfg. Co., Halsted St. & 48th Pl., Chicago, Ill.
Hunt, C. W., Co., 45 Broadway, New York
Jeffrey Mfg. Co., Columbus, O.
Morgan-Gardner Electric Co., Chicago, Ill.
Porter, H. K., Co., Pittsburg, Pa.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Wagner-Palmros Mfg. Co., Fairmont, W Va.
Westinghouse Electric & Mfg. Co., 27 Westinghouse Bldg., Pittsburg, Pa.
Westinghouse Machine Co., Pittsburg, Pa.

46 Steam.

American Locomotive Co., 25 Broad St., New York.
Baldwin Locomotive Works, 500 N. Broad St., Philadelphia.
Hicks, F. M., Locomotive & Car Works, 277 Dearborn St., Chicago, Ill.
Kilby Locomotive & Machine Works, Anniston, Ala.
Lima Locomotive & Machine Co., Lima, O.
Porter, H. K., Co., Pittsburg, Pa.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Rogers Locomotive Works, Paterson, N. J.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Vulcan Iron Works, Wilkesbarre, Pa.

47 LIGHT.

American Locomotive Co., 25 Broad St., New York.
Baldwin Locomotive Works, 500 N. Broad St., Philadelphia.
Byers, John F., Machine Co., Ravenna, O.
Davenport Locomotive Works, Davenport, Ia.
Knowlson & Kelly, Troy, N. Y.
Lima Locomotive & Machine Co., Lima, O.
Porter, H. K., Co., Pittsburg, Pa.
Rees, James, & Sons Co., Pittsburg, Pa.
Vulcan Iron Works, Wilkesbarre, Pa.

48 LUBRICATORS, JOURNAL.

Commonwealth Railway Supply Co., Monadnock Blk., Chicago, Ill.

LUBRICATORS, JOURNAL, continued

Harrison-Williams Co., Toledo, O.
Railway Journal Lubricating Co., 12th St. & St. Paul Ave., Milwaukee, Wis.

49 **REGISTERS, FARE.** For use on street railways.

Fowler & Robert Mfg. Co., 1263 Atlantic Ave., Brooklyn, N. Y.
International Register Co., 124 W. Jackson Blvd., Chicago.
Ohmer Fare Register Co., Dayton, O.
Railway Register Mfg. Co., 1193 Broadway, New York.
St. Louis Register Co., St. Louis, Mo
Security Register Co., St. Louis, Mo.
Sterling-Meaker Co., 420-422 Ogden St, Newark, N. J.

50 **SPRINGS, CAR, ETC.**

American Spiral Spring Co., Pittsburg, Pa.
American Steel & Wire Co., The Rookery, Chicago, Ill.
Diamond State Car Spring Co., Wilmington, Del.
Farist Steel Co., Bridgeport, Conn.
Fort Pitt Spring & Mfg. Co., McKees Rocks, Pa.
Morgan Spring Co., Worcester, Mass.
Pittsburg Spring & Steel Co., 1416-1417 Farmers' Bank Bldg., Pittsburg, Pa.
Railway Steel Spring Co., 71 Broadway, New York.
Simplex Railway Appliance Co., Hammond, Ind.
Union Spring & Mfg. Co., New Kensington, Pa.
Vose Spring Co, 115 Broadway, New York.

51 **TIRES, LOCOMOTIVE AND CAR WHEEL.**

Midvale Steel Co., Nicetown, Philadelphia, Pa.
Latrobe Steel & Coupler Co., 1200 Girard Bldg., Philadelphia.
Railway Steel Spring Co., 71 Broadway, New York.
Standard Steel Works, 1103 Harrison Bldg., Philadelphia, Pa.

52 **TRUCKS.** Wheels in a framework, which supports one end of a car.

American Steel Foundries, 74 Broadway, New York.
Barney & Smith Car Co., Dayton, O.
Bettendorf Axle Co., Davenport, Ia.
Commonwealth Steel Co., Bank of Commerce Bldg., St. Louis.
Dorner Truck & Foundry Co., Logansport, Ind.
Kindl Car Truck Co., Merchants Loan & Trust Bldg., Chicago, Ill.
Laconia Car Co. Works, 131 State St., Boston, Mass.
Middletown Car Works, Middletown, Pa.
Peckham Mfg. Co., 26 Cortlandt St., New York.
Pressed Steel Car Co., Pittsburg, Pa.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Savannah Locomotive Works & Supply Co., Savannah, Ga.
Scullin-Gallagher Iron & Steel Co., St. Louis, Mo.
Standard Car Truck Co., Old Colony Bldg., Chicago, Ill.
Standard Steel Car Co., Pittsburg, Pa.
Sterlingworth Railway Supply Co., North American Bldg., Philadelphia, Pa.
Washburn Co., Minneapolis, Minn.
Western Railway Equipment Co., Missouri Trust Bldg., St. Louis, Mo

TRUCKS, continued

53 **Electric Car.**

Baltimore Car Wheel Co., Patterson Ave. & Payson St., Baltimore, Md.
Bemis Car Truck Co., 120-122 Liberty St., New York.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
Laconia Car Co. Works, 131 State St., Boston, Mass.
McGuire Mfg. Co., 122 N. Sangamon St., Chicago, Ill.
St. Louis Car Co., 8,000 N. Broadway, St. Louis, Mo.
Stephenson, John, Co., Ltd., 47 E. 27th St., New York.
Taylor Electric Truck Co., Troy, N. Y.

54 **TURNBUCKLES.**

Cleveland City Forge & Iron Co., Cleveland, O.
Hoopes & Townsend Co., 1330 Buttonwood St., Philadelphia.
Michigan Bolt & Nut Co., Detroit, Mich.
Republic Iron & Steel Co., 108 La Salle St., Chicago, Ill.
Sebring Forging Co., Sebring, O.

55 **UNLOADERS, CAR.** For unloading ballast, etc., from flat cars.

Bucyrus Co., South Milwaukee, Wis.
Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.
Garry Iron & Steel Co., Cleveland, O.
Lidgerwood Mfg. Co., 96 Liberty St., New York
Marion Steam Shovel Co., Marion, O.

56 **WHEELS, CAR, ETC.**

American Car & Foundry Co., Lincoln Trust Bldg., St. Louis.
Baltimore Car Wheel Co., Patterson Ave. & Payson St., Baltimore, Md.
Barnum-Richardson Co., Lime Rock, Conn.
Battle Creek Iron Works, Battle Creek, Mich.
Boston Car Wheel Co., Chelsea, Mass.
Bradley, O., & Sons, Worcester, Mass.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
Brown Car Wheel Works, Buffalo, N. Y.
Butterworth & Lowe, Grand Rapids, Mich.
Catawissa Car & Foundry Co., Catawissa, Pa.
Cayuta Wheel & Foundry Co., Sayre, Pa.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.
Chester Steel Castings Co., 407 Sansom St., Philadelphia, Pa.
Fort Madison Iron Works, Fort Madison, Ia.
Griffin Wheel Co., 138 Jackson Blvd., Chicago, Ill.
Harman & Hassert, Bloomsburg, Pa.
Keystone Axle Co., Pittsburg, Pa.
Keystone Car Wheel Co., Pittsburg, Pa.
Kilby Locomotive & Machine Works, Anniston, Ala.
Laconia Car Co. Works, 131 State St., Boston, Mass.
Lehigh Car Wheel & Axle Works, Catasauqua, Pa.
Lima Locomotive & Machine Co., Lima, O.
Lobdell Car Wheel Co., Wilmington, Del.
Louisville Car Wheel & Railway Supply Co., Louisville, Ky.
Maryland Car Wheel Works, 44 South St., Baltimore, Md.
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.
National Car Wheel Co., Park Bldg., Pittsburg, Pa.
Niles & Scott Co., LaPort, Ind.
New York Car Wheel Works, Buffalo, N. Y.
Peacock's Iron Works, Selma, Ala.

WHEELS, CAR, ETC., continued

Peteler Portable Railway Mfg. Co., Minneapolis, Minn.
Railway Steel Spring Co., 71 Broadway, New York.
Ramapo Iron Works, Hillburn, N. Y.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Roberts Car & Wheel Co., Three Rivers, Mich.
Russell Wheel & Foundry Co., Detroit, Mich.
Rochester Car Wheel Works, Rochester, N. Y.
St. Albans Foundry, St. Albans, Vt.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
St. Louis Car Wheel Co., St. Louis, Mo.
Schoen Steel Wheel Co., 170 Broadway, New York.
Sheffield Car Co., Three Rivers, Mich.
Standard Car Wheel Co., Cleveland, O.
Standard Steel Works, 1103 Harrison Bldg., Philadelphia, Pa.
Taylor Iron & Steel Co., High Bridge, N. J.
Thacher, George H., & Co., Albany, N. Y.
Wason Mfg. Co., Springfield, Mass.
Wharton, Wm., Jr., & Co., Inc., 308 Walnut St., Philda.
Whitney Car Wheel Works, 901 Montgomery Ave., Philda.

---

57 TRACK, CONSTRUCTION AND REPAIR EQUIPMENT.

58 **BUMPING POSTS.** Which keep cars from running off the end of a track.

Commonwealth Railway Supply Co., Monadnock Blk., Chicago.
McCord & Co., Old Colony Bldg., Chicago, Ill.
Mechanical Mfg. Co., Chicago, Ill.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.

59 **CATTLE GUARDS.** For keeping cattle off the tracks.

American Bridge Co., 100 Broadway, New York.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Climax Stock Guard Co., Canton, O.
Johnson, W. P., Co., 125 La Salle St., Chicago, Ill.
Merrill-Stevens Mfg. Co., Kalamazoo, Mich.
National Surface Guard Co., The Rookery, Chicago, Ill.
Sheffield Car Co., Three Rivers, Mich.
West, Francis T., The Rookery, Chicago, Ill.

60 **COALING CHUTES, LOCOMOTIVE.** For loading coal on locomotive tenders.

Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.
Hunt, C. W., Co., 45 Broadway, New York.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Williams, White & Co., Moline, Ill.

61 **CROSSING GATES.**

Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Pneumatic Gate Co., 149 E. Huron St., Chicago, Ill.
Pneumatic Signal Co., Broad Exchange Bldg., New York.
Standard Railway Gate Co., Saginaw, Mich.
Wilson Railway Gate Co., Birmingham, Mich.

62 DERAILING DEVICES.

Hayes Track Appliance Co., Geneva, N. Y.
Ohio Brass Co., Mansfield, O.
Paige Iron Works, Monadnock Blk., Chicago, Ill.
Pneumatic Gate Co., 149 E. Huron St., Chicago, Ill.

63 FROGS AND CROSSINGS.

Ajax Forge Co., Blue Island & Hayne Aves., Chicago, Ill.
Alabama Frog & Switch Co., Anniston, Ala.
Allentown Rolling Mills, Allentown, Pa.
American Frog & Mfg. Co., 302-303 New England Bldg., Kansas City, Mo.
American Frog & Switch Co., Hamilton, O.
Barbour-Stockwell Co., Cambridgeport, Mass.
Beall Non-Pounding Frog & Crossing Co., Merchants' Bank Bldg., South Bend, Ind.
Cleveland Frog & Crossing Co., Cleveland, O.
Coughlin-Sanford Switch Co., 25 Broad St., New York.
Elkhart Frog & Crossing Works, Elkhart, Ind.
Elliot Frog & Switch Co., East St. Louis, Ill.
Falk Co., Milwaukee, Wis.
Indianapolis Switch & Frog Co., Springfield, O.
Johnston Railroad Frog & Switch Co., Chester, Pa.
Lorain Steel Co., Lorain, O.
Manufacturing Co., of Carlisle, Carlisle, Pa.
Morden Frog & Crossing Works, The Rookery, Chicago, Ill.
Mogul Claw Bar Co., Lawrence, Kan.
New Jersey Steel Co., Bowling Green Bldg., New York.
New York Switch & Crossing Co., Hoboken, N. J.
Paige Iron Works, Monadnock Blk., Chicago, Ill.
Pennsylvania Steel Co., Steelton, Pa.
Pettibone, Mulliken & Co., Marquette Bldg., Chicago, Ill.
Ramapo Iron Works, Hillburn, N. Y.
Thompson, Charles A., 316 N. 3d St., St. Louis, Mo.
Union Switch & Signal Co., Swissvale, Pa.
Weir Frog Co., Front, Smith & Water Sts., Cincinnati, O.
Wharton, Wm., Jr., Inc., 308 Walnut St., Philadelphia, Pa.

64 Frogs, Replacing. For replacing derailed cars.

Alexander Car Replacer Co., Scranton, Pa.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Commonwealth Railway Supply Co., Monadnock Blk., Chicago, Ill.
Foster Car Replacer & Supply Co., Stock Exchange, Chicago.
Handy Car Equipment Co., Old Colony Bldg., Chicago, Ill.
Heitzmann Tool & Supply Co., Hoboken, N. J.
Johnson Wrecking Frog Co., 457 Prospect St., Cleveland, O.
Little Giant Car Replacing Co., Buffalo, N. Y.
Pritchard Pressed Steel Car Replacer Co., St. Paul, Minn.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Tilden, B. E., Co., Manhattan Bldg., Chicago, Ill.
Walker Car Replacer Co., St. Paul, Minn.

65 GATES, RAILWAY. See 61, Crossing Gates.

66 GRADERS AND SPREADERS. For spreading ballast, etc., on railroad tracks.

Mann-McCann Co., Fisher Bldg., Chicago, Ill.

67 **MOVERS, CAR.**

Boyer & Bradford, Dayton, O.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.
Woodman, R., Mfg. & Supply Co., 63 Oliver St., Boston, Mass.

68 **RAIL FASTENINGS.**

69 **Nut Locks.** For locking nuts as on a bolt.

Cleveland City Forge & Iron Co., Cleveland, O.
Colorado Fuel & Iron Co., Denver, Col.
Columbia Lock Nut Co., Inc., Bridgeport, Conn.
Eureka Nut Lock Co., Pittsburg, Pa.
Franklin Railway Supply Co., Franklin, Pa.
French, A., Spring Co., Pittsburg, Pa.
Jones Positive Nut Lock Co., 2812 Wabash Ave., Chicago, Ill.
National Elastic Nut Co., Milwaukee, Wis.
National Lock Washer Co., Newark, N. J.
Ruffner, D. B., & Son, Schuylkill Falls, Philadelphia, Pa.
Spiral Nut Lock Co., 143 Liberty St., New York.
Upson Nut Co., Cleveland, O.
Verona Tool Works, Murtland Bldg., Pittsburg, Pa.
Volute Lock Co., Fort Wayne, Ind.
Wharton, William, Jr., & Co., Inc., 309 Walnut St., Philda, Pa.

70 **RAIL BONDS.** See Page 201, No. 263.

71 **Rail Braces.** For holding rails in position on curves and other places where they are subjected to excessive strain.

Ajax Forge Co., Blue Island & Hayne Aves., Chicago, Ill.
Alabama Frog & Switch Co., Anniston, Ala.
American Frog & Mfg. Co., 302-303 New England Bldg., Kansas City, Mo.
American Frog & Switch Co., Hamilton, O.
Atlas Railway Supply Co., Manhattan Bldg., Chicago, Ill.
Cambria Steel Co., Arcade Bldg., 15th & Market Sts., Philda.
Continuous Rail Joint Co., of America, 912 Prudential Bldg., Newark, N. J.
Dayton Malleable Iron Co., Dayton, O.
Elliot Frog & Switch Co., East St. Louis, Ill.
McConway & Torley Co., 48th St. & A. V. Railway, Pittsburg, Pa.
Morden Frog & Crossing Works, The Rookery, Chicago, Ill.
Pennsylvania Steel Co., Steelton, Pa.
Pettibone, Mulliken & Co., Marquette Bldg., Chicago, Ill.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.
Ramapo Iron Works, Hillburn, N. Y.
Republic Iron & Steel Co., 108 La Salle St., Chicago, Ill.
Weber Railway Joint Mfg. Co., 71 Broadway, New York.
Weir Frog Co., Front, Smith & Water Sts., Cincinnati, O.

72 **Rail Joints.** For connecting the ends of adjacent rails.

Atlas Railway Supply Co., Manhattan Bldg., Chicago, Ill.
Bonzano Rail Joint Co., 22 S. 15th St., Philadelphia, Pa.
Cambria Steel Co., Arcade Bldg., 15th & Market Sts., Philda.
Continuous Rail Joint Co., of America, 912 Prudential Bldg., Newark, N. J.

RAIL JOINTS, continued

Diamond State Steel Co., Wilmington, Del.
Falk Co., Milwaukee, Wis.
Fisher Rail Joint Works, Newark, N. J.
French, A., Spring Co., Pittsburg, Pa.
Garry Iron & Steel Co., Cleveland, O.
Heil Rail Joint Welding Co., Milwaukee, Wis.
Illinois Steel Co., The Rookery, Chicago, Ill.
Independent Railway Supply Co., The Rookery, Chicago, Ill.
McConway & Torley Co., 48th St. & A. V. Railway, Pittsburg, Pa.
New Jersey Steel Co., Bowling Green Bldg., New York.
Pennsylvania Steel Co., Steelton, Pa.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Weber Railway Joint Mfg. Co., 71 Broadway, New York.

73 **Tie Plates.** Plates laid between a railway tie and the rail.

Atlas Railway Supply Co., Manhattan Bldg., Chicago, Ill.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Commonwealth Railway Supply Co., Monadnock Blk., Chicago, Ill.
Diamond State Steel Co., Wilmington, Del.
Dilworth, Porter & Co., Pittsburg, Pa.
Hart Steel Co., 137 Broadway, New York.
Herdon Compensation Tie Plate Co., Galeton, Pa.
Illinois Steel Co., The Rookery, Chicago, Ill.
Independent Railway Supply Co., The Rookery, Chicago, Ill.
Pratt & Letchworth Co., 189 Tonawanda St., Buffalo, N. Y.
Republic Iron & Steel Co., 108 La Salle St., Chicago, Ill.

74 **RAILS.**

Aetna Standard Iron & Steel Co., Bridgeport, O.
Akron Iron Co., Akron, O.
Cambria Steel Co., Arcade Bldg., 15th & Market Sts., Philda.
Carnegie Steel Co., Pittsburg, Pa.
Falk Co., Milwaukee, Wis.
Illinois Steel Co., The Rookery, Chicago, Ill.
Lackawanna Iron and Steel Co., Scranton, Pa.
Lorain Steel Co., Lorain, O.
Maryland Rail Co., Cumberland, Md.
Pennsylvania Steel Co., Steelton, Pa.
Republic Iron & Steel Co., 108 La Salle St., Chicago, Ill.
Schonthal Iron & Steel Co., Cumberland, Md.
Union Rail Co., Huntington, W. Va.

75 **SNOW PLOWS AND FLANGERS.** For cleaning snow from railway tracks or from the flanges of car wheels.

Bradley, O., & Sons, Worcester, Mass.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Russell Car & Snow Plow Co., Ridgway, Pa.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Wason Mfg. Co., Springfield, Mass.

76 **SWITCHES AND SIGNALING APPARATUS.**

77 **Fusees.** See 79, Torpedoes.

SIGNALING APPARATUS, continued

78 **Signals.**

Adams & Westlake Co., 110 Ontario St., Chicago, Ill.
American Electric Switch Co., Pittsburg, Pa.
Dressel Railway Lamp Works, 3876 Park Ave., New York.
Hall Signal Co., 25 Broad St., New York.
Mozier Safety Signal Co., Cleveland, O.
Pneumatic Signal Co., Broad Exchange Bldg., New York.
Railroad Supply Co., 215 Dearborn St., Chicago, Ill.
Safety Switch & Signal Co., Battle Creek, Mich.
Storm Railway Signal Co., Waterloo, Ia.
Taylor Signal Co., Buffalo, N. Y.
Union Switch & Signal Co., Swissvale, Pa.
Weir Frog Co., Front, Smith & Water Sts., Cincinnati, O.

79 TORPEDOES. Metal capsules containing an explosive placed upon the track so that its explosion may serve as a signal.

Detwiller & Street Fireworks Mfg. Co., 172 Fulton St., N. Y.
Schooley-McClure Co., McKeesport, Pa.
United States Railway Signal & Supply Co., Fostoria, O.
Western Railway Signal Co., Fostoria, O.
Whall, C. H., & Co., 170 Summer St., Boston, Mass.
Wood Mfg. Co., Fostoria, O.

80 **Switch Locks.** In which a spring keeps the lever in position.

Coughlin-Sanford Switch Co., 25 Broad St., New York.
Dayton Mfg. Co., Dayton, O.
Hall Signal Co., 25 Broad St., New York.
Miller Lock Co., Frankford, Philadelphia, Pa.
Union Switch & Signal Co., Swissvale, Pa.

81 **Switch Stands.** For use in moving and holding switch rails.

Ajax Forge Co., Blue Island & Hayne Aves., Chicago, Ill.
American Frog & Switch Co., Hamilton, O.
American Valve & Meter Co., Cincinnati, O.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Coughlin-Sanford Switch Co., 25 Broad St., New York.
Elkhart Frog & Crossing Works, Elkhart, Ind.
Elliot Frog & Switch Co., East St. Louis, Ill.
Indianapolis Switch & Frog Co., Springfield, O.
Johnston Railroad Frog & Switch Co., Chester, Pa.
McGuire Mfg. Co., 122 N. Sangamon St., Chicago, Ill.
Manufacturing Co., of Carlisle, Carlisle, Pa.
Medric Co., 960 Rose Bldg., Cleveland, O.
Morden Frog & Crossing Works, The Rookery, Chicago, Ill.
New York Switch & Crossing Co., Hoboken, N. J.
Pennsylvania Steel Co., Steelton, Pa.
Pettibone, Mulliken & Co., Marquette Bldg., Chicago, Ill.
Ramapo Iron Works, Hillburn, N. Y.
Union Switch & Signal Co., Swissvale, Pa.
Weir Frog Co., Front, Smith & Water Sts., Cincinnati, O.
Wharton, Wm., Jr., & Co., Inc., 308 Walnut St., Philadelphia.
Wonham & Magor Engineering Works, 29 Broadway, N. Y.

82 **Switches.** For moving a small section of a track so that cars may be shunted from one track to another.

Ajax Forge Co., Blue Island & Hayne Aves., Chicago, Ill.

SWITCHES, continued

Alabama Frog & Switch Co., Anniston, Ala.
Allentown Rolling Mills, Allentown, Pa.
American Electric Switch Co., Pittsburg, Pa.
American Frog & Mfg. Co., 302-303 New England Bldg., Kansas City, Mo.
Barbour-Stockwell Co., Cambridgeport, Mass.
Cleveland Frog & Crossing Co., Cleveland, O.
Coughlin-Sanford Switch Co., 25 Broad St., New York.
Falk Co., Milwaukee, Wis.
Elkhart Frog & Crossing Works, Elkhart, Ind.
Elliot Frog & Switch Co., East St. Louis, Ill.
Indianapolis Switch & Frog Co., Springfield, O.
Johnston Railroad Frog & Switch Co., Chester, Pa.
Lorain Steel Co., Lorain, O.
Manufacturing Co., of Carlisle, Carlisle, Pa.
Morden Frog & Crossing Works, The Rookery, Chicago, Ill.
New York Switch & Crossing Co., Hoboken, N. J.
Paige Iron Works, Monadnock Blk., Chicago, Ill.
Pennsylvania Steel Co., Steelton, Pa.
Pettibone, Mulliken & Co., Marquette Bldg., Chicago, Ill.
Ramapo Iron Works, Hillburn, N. Y.
Safety Switch & Signal Co., Battle Creek, Mich.
Thompson, Charles A., 516 N. 3d St., St. Louis, Mo.
Union Switch & Signal Co., Swissvale, Pa.
Weir Frog Co., Front, Smith & Water Sts., Cincinnati, O.
Wharton, Wm., Jr., & Co., Inc., 308 Walnut St., Philadelphia.
Wonham & Magor Engineering Works, 29 Broadway, N. Y.

83 TRACK CLEANERS, STREET RAILWAY.

Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
McGuire Mfg. Co., 122 N. Sangamon St., Chicago, Ill.
Root Track Scraper Co., Kalamazoo, Mich.
Van Dorn & Dutton Co., 1796 E. Madison Ave., Cleveland, O.

84 Sand Blast. For removing scale, etc., from rails preparatory to placing of rail joints.

85 TRACK LAYING MACHINES.

86 TRACK SANDERS. For pouring sand on the rails through pipes which end in front of the driving wheels.

Heil Rail Joint Welding Co., Milwaukee, Wis.
Holman, D. F., Tracklayer Co., 140 Dearborn St., Chicago, Ill.
American Metallic Packing & Supply Co., Cleveland, O.
American Locomotive Sander Co., 13th & Willow Sts., Philda.
De Witt Sand Box Co., Troy, N. Y.
Duner, John C., 116 S. Clinton St., Chicago, Ill.
Economy Locomotive Sander Co., Baltimore, Md.
Ham Sand Box Co., Troy, N. Y.
Huff Locomotive Appliance Co., Boston, Mass.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
Sterling-Meaker Co., 420-422 Ogden St., Newark, N. J.
Walters, J. H., Augusta, Ga.
Western Railway Equipment Co., Missouri Trust Bldg., St. Louis, Mo.

87 TRACK TOOLS.

Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.

TRACK TOOLS, continued

Baker, Jas. H., Mfg. Co., 2324 Farmers' Bank Bldg., Pittsburg, Pa.
Elkhart Frog & Crossing Works, Elkhart, Ind.
Elliot Frog & Switch Co., East St. Louis, Ill.
Eyeless Tool Co., 26 Cortlandt St., New York.
Fowler, Geo. L., 53 Broadway, New York.
Hubbard & Co., Pittsburg, Pa.
Iron City Tool Works, Ltd., Pittsburg, Pa.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Millers Falls Co., Millers Falls, Mass.
Solid Steel Tool Co., Chicago, Ill.
Verona Tool Works, Murtland Bldg., Pittsburg, Pa.
Wharton, Wm., Jr., & Co., Inc., 308 Walnut St., Philadelphia.

88 **Claw Bars.** Iron Bars with a bent forked end for drawing spikes, etc.

Mogul Claw Bar Co., Lawrence, Kan.
Morrill, Charles, 277 Broadway, New York.
Solid Steel Tool Co., Chicago, Ill.
Union Drop Forge Co., 64 to 76 E. Ohio St., Chicago, Ill.
Verona Tool Works, Murtland Bldg., Pittsburg, Pa.

89 **Gages, Track and Tie Plate.** For adjusting rails, etc.

Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Diamond State Steel Co., Wilmington, Del.
Elliot Frog & Switch Co., East St. Louis, Ill.
Sheffield Car Co., Three Rivers, Mich.
Verona Tool Works, Murtland Bldg., Pittsburg, Pa.
Railroad Supply Co., 215 Dearborn St., Chicago, Ill.

90 **TRACK THROWING MACHINES.** For moving tracks by locomotive power without loosening the ballast.

Mann-McCann Co., Fisher Bldg., Chicago, Ill.

91 **TURN AND TRANSFER TABLES.** Rotating platforms for turning cars.

Allentown Rolling Mills, Allentown, Pa.
American Bridge Co., 100 Broadway, New York.
Atlas Bolt & Screw Co., Cleveland, O.
Barbour-Stockwell Co., Cambridgeport, Mass.
Bonnot Co., Canton, O.
Boston Bridge Works, 47 Winter St., Boston, Mass.
Brill, J. G., Co., 62d St. & Woodland Ave., Philadelphia, Pa.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Carnegie Steel Co., Pittsburg, Pa.
Chicago Bridge & Iron Co., 105th & Throop Sts., Chicago, Ill.
Cleveland Car Co., West Park, O.
Clinton Bridge & Iron Works, Clinton, O.
Columbia Bridge Co., Pittsburg, Pa.
Dorner Truck & Foundry Co., Logansport, Ind.
Eastern Bridge & Structural Co., Worcester, Mass.
Edge Moor Bridge Works, Wilmington, Del.
Fulton Foundry Co., Marquette St. & L. S. & M. S. Ry., Cleveland, O.
Greenleaf Turntable Co., 2302 Boyd Ave., Indianapolis, Ind.
Harrington, Edwin, Son & Co., Inc., 1511 Pennsylvania Ave., Philadelphia, Pa.

TURN AND TRANSFER TABLES, continued

Hunt, C. W., Co., 45 Broadway, New York.
Industrial Works, Bay City, Mich.
Johnston Railroad Frog & Switch Co., Chester, Pa.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
King Bridge Co., Cleveland, O.
Leavitt, C. W., & Co., 15 Cortlandt St., New York.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Lobdell Car Wheel Co., Wilmington, Del.
Lorain Steel Co., Lorain, O.
Louisville Bridge & Iron Co., 11th & Oldham Sts., Louisville, Ky.
McClintic-Marshall Construction Co., Pittsburg, Pa.
Massillon Bridge Co., Massillon, O.
Missouri Valley Bridge & Iron Works, Leavenworth, Kan.
Mt. Vernon Bridge Co., Mt. Vernon, O.
New York Switch & Crossing Co., Hoboken, N. J.
Nichols, Geo. P., & Bro., Monadnock Blk., Chicago, Ill.
Northern Engineering Works, Detroit, Mich.
Passaic Steel Co., Paterson, N. J.
Peacock's Iron Works, Selma, Ala.
Pencoyd Iron Works, 261 S. 4th St., Philadelphia, Pa.
Pennsylvania Bridge Co., Beaver Falls, Pa.
Pennsylvania Steel Co., Steelton, Pa.
Phoenix Bridge Co., 410 Walnut St., Philadelphia, Pa.
Republic Iron & Steel Co., 108 La Salle St., Chicago, Ill.
Sellers, William, Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Strobel, C. L., Monadnock Blk., Chicago, Ill.
Tippett & Wood, Phillipsburg, N. J.
Trenton Iron Co., Trenton, N. J.
Van Dorn & Dutton Co., 1796 E. Madison Ave., Cleveland, O.
Virginia Bridge & Iron Co., Roanoke, Va.
Vulcanus Forging Co., 965 Hamilton St., Cleveland, O.
Wharton, Wm., Jr., & Co., Inc., 308 Walnut St., Philadelphia.
Whiting Foundry Equipment Co., Harvey, Ill.
Wisconsin Bridge & Iron Co., Pabst Bldg., Milwaukee, Wis.
Wonham & Magor Engineering Works, 29 Broadway, N. Y.

92 **WATER COLUMNS, RAILWAY.** For conveying water to locomotive boilers.

American Valve & Meter Co., Cincinnati, O.
Best Mfg. Co., Pittsburg, Pa.
Fairbanks, Morse & Co., Franklin & Monroe Sts., Chicago, Ill.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Otto Gas Engine Works, 33d & Walnut Sts., Philadelphia, Pa.
Sheffield Car Co., Three Rivers, Mich.
Thompson, J., & Co., Van Horn & Sophia Sts., Philadelphia.
United States Wind Engine & Pump Co., Batavia, Ill.

SECTION IV

PRINTING MACHINERY.

INDEX TO DEPARTMENTS.

	Page
Book Binding Machinery	465
Paper Box Machinery	469
Paper Cutting Machines	470
Paper Feeding Machines	471
Paper Folding Machines	472
Paper Mill Machinery	472
Printing Machinery	477

MANUFACTURERS OF
PRINTING MACHINERY.

Alphabetical Index.

Acme Staple Co., 500 No. 12th St., Philadelphia, Pa.—Wire Stitching Machines.
Aluminum Press Co., 41 Park Row, New York.—Printing Presses.
American Paper Feeder Co., 255 Atlantic Ave., Boston, Mass.—Paper Feeders.
Andrews & Pitman, Hartford, Conn.—Plate Holding Blocks.
Appleton Machine Co., Appleton, Wis.—Refining Engines, Wet Machines.
Appleton Screen Plate Co., Appleton, Wis.—Screen Plates.
Atlantic Works, East Boston, Mass.—Paper Cutting Machines.
Automatic Box Machinery Concern, 270 Congress St., Boston, Mass.—Paper Box Machinery.
Babcock Printing Press Mfg. Co., New London, Conn.—Printing Presses.
Bagley & Sewall Co., Watertown, N. Y.—Fourdrinier Machines, Grinders.
Baker & Shevlin Co., Saratoga Springs, N. Y.—Beating and Washing Engines, etc.
Balston, J. Harris, Greenpoint, N. Y.—Paper Stock Presses.
Bascom Eclipse Folder Co., Sidney, O.—Paper Folders.
Bates Machine Co., 346 Broadway, New York.—Numbering Machines.
Beck, Charles, Paper Co., Ltd., 609 Chestnut St., Philadelphia, Pa.—Paper Cutters, Wire Stitching Machines, etc.
Bellows Falls Screen Plate Co., Bellows Falls, Vt.—Screen Plates.
Beloit Iron Works, Beloit, Wis.—Cylinder and Fourdrinier Machines, etc.
Bendernagel & Co., 521 Ludlow St., Philadelphia, Pa.—Printers' Rollers.
Bigelow, Cheney, Wire Works, Springfield, Mass.—Fourdrinier Wires.
Bingham Bros., Philadelphia, Pa.—Printers' Rollers.
Bingham Bros. Co., 406 Pearl St., New York.—Printers' Rollers.
Bingham's, Samuel, Son Mfg. Co., 201 S. Canal St., Chicago, Ill.—Printers' Rollers.
Bingham & Runge, Cleveland, O.—Printers' Rollers.
Birmingham Iron Foundry, Derby, Conn.—Calenders.
Black-Clawson Co., Hamilton, O.—Paper Mill Machinery.
Blackhall Mfg. Co., 16 Lock St., Buffalo, N. Y.—Die Presses, Perforators.
Blessing, Louis, 508 N. Mechanic St., Jackson, Mich.—Ending Machines.
Boomer & Boschert Press Co., Syracuse, N. Y.—Paper Stock Presses.
Boston Printing Press Mfg. Co., 176 Federal St., Boston, Mass.—Printing Presses.
Boston Wire Stitcher Co., 176 Summer St., Boston, Mass.—Wire Stitching Machines.
Bradley, Milton Co., Springfield, Mass.—Card Cutters.
Braidwood, J. W., 207 Centre St., New York.—Index Cutters.
Braunsdorf, J. H., Pearl River, N. Y.—Printing Presses.
Brown Folding Machine Co., Erie, Pa.—Paper Folders.
Brown, R. H., & Co., New Haven, Conn.—Wire Stitching Machines, etc.
Brown & Sellers Co., Holyoke, Mass.—Dandy Rolls, Fourdrinier Wires.

Brownville Iron Works, Brownville, N. Y.—Screens.
Buchanan & Bolt Wire Co., Holyoke, Mass.—Dandy Rolls, Fourdrinier Wires.
Burton's, A. G., Son, 42 So. Clinton St., Chicago, Ill.—Perforators.
Bushnell, George H., Press Co., Thompsonville, Conn.—Paper Stock Presses.
Cabble, William, 43 Fulton St., New York.—Fourdrinier Wires.
Campbell Printing Press & Mfg. Co., 1 Madison Ave., New York.—Printing Presses.
Carthage Machine Co., Carthage, N. Y.—Wet Machines, Screens, etc.
Carver, C. R., Co., 15th St. & Lehigh Ave., Philadelphia, Pa.—Embossing Machines.
Central Machine Works, 327 Dearborn St., Chicago, Ill.—Paper Folders.
Challenge Machinery Co., 2529 Leo St., Chicago, Ill.—Printing Presses, Paper Cutters, etc.
Chambers Bros. Co., 52d St. below Lancaster Ave., Philadelphia, Pa.—Paper Folders, Gluing and Pasting Machines.
Chandler & Price Co., Cleveland, O.—Printing Presses, Paper Cutters.
Chapin-Love Machine Co., New Orange, N. J.—Paper Drills.
Chicago Roller Co., 114-116 Sherman St., Chicago, Ill.—Printers' Rollers.
Child Acme Cutter & Press Co., 33 Kemble St., Boston, Mass.—Paper Cutters.
Clark H. C., & Son Machine Co., Lee, Mass.—Cylinder and Fourdrinier Machines, etc.
Conner, Fendler & Co., 56 Beekman St., New York.—Printers' Tools and Accessories.
Cottrell, C. B., & Sons, Co., 41 Park Row, New York.—Printing Presses.
Cranston Printing Press Co., Palmyra, N. Y.—Printing Presses.
Crawley Book Machinery Co., Inc., Newport, Ky.—Rounding and Backing Machines, etc.
Crutsinger, C. W., St. Louis, Mo.—Printers' Rollers.
Currier, Cyrus & Sons, Newark, N. J.—Beating and Washing Engines.
Damon & Peets, 44 Beekman St., New York.—Printers' Tools and Accessories.
Daniels Machine Co., Woodstock, Vt.—Rag Cutters.
Dayton Globe Iron Works, Dayton, O.—Beating and Washing Engines.
De Witt Wire Cloth Co., 17 Warren St., New York.—Dandy Rolls, Fourdrinier Wires.
Dexter Folder Co., Pearl River, N. Y.—Paper Feeders and Folders.
Dietz, Bernhard Co., Baltimore, Md.—Printers' Rollers.
Dillon Machine Co., Lawrence, Mass.—Paper Mill Machinery.
Ditts Machine Works, Fulton, N. Y.—Beating and Washing Engines.
Dodson Printers' Supply Co., Atlanta, Ga.—Printers' Rollers.
Downington Mfg. Co., East Downington, Pa.—Paper Mill Machinery.
Duplex Printing Press Co., Battle Creek, Mich.—Printing Presses.
Durant, W. N., Milwaukee, Wis.—Counting Machines.
Eardley & Winterbottom, 125 Worth St., New York.—Paper Cutters.
Eastwood Wire Mfg. Co., Belleville, N. J.—Dandy Rolls, Fourdrinier Wires, etc.
Ellis, William F., 174 Centre St., New York.—Rounding and Backing Machines.
Ellison Bros., 2213 Bridge St., Frankford, Philadelphia, Pa.—Perforators.
Emerson Mfg. Co., Lawrence, Mass.—Beating and Washing Engines.
Empire Folding Machine Co., Palmyra, N. Y.—Paper Folders.
Ermold, Edward, 652 Hudson St., New York.—Die Cutting Machines.
Farmer, A. D., & Son, Type Founding Co., 63 Beekman St., New York.—Printers' Tools and Accessories.
Farrell Foundry & Machine Co., Ansonia, Conn.—Calenders, Grinding Machines.

Force, Wm. A., & Co., 59 Beekman St., New York.—Numbering Machines.
Francis, A. E., Cleveland, O.—Plate Engraving Machines.
Franklin Machine Co., 506 Cuthbert St., Philadelphia, Pa.—Paper Cutters.
Friction Pulley & Machine Co., Sandy Hill, N. Y.—Wet Machines, Screens, etc.
Fuchs & Lang Mfg. Co., Rutherford, N. J.—Lithographers' Machinery.
Fuller, E. C., Co., 28 Reade St., New York.—Smoothing Machines, Cutters.
Gally, M., Hartford, Conn.—Printing Presses.
Gether-Drebert-Perkins Co., Milwaukee, Wis.—Perforators.
Gleeson, Thomas E., East Newark, N. J.—Dandy Rolls, Fourdrinier Wires.
Globe Wire Co., Harrison, N. J.—Dandy Rolls.
Godfrey & Co., 909 Sansom St., Philadelphia, Pa.—Printers' Rollers.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.—Printing Presses.
Gordon Press Works, Rahway, N. J.—Printing Presses.
Gorton, George Machine Co., Racine, Wis.—Plate Engraving Machines.
Goss Printing Press Co., 16th St. & Ashland Ave., Chicago, Ill.—Printing Presses, etc.
Griswold, George M., New Haven, Conn.—Automatic Box Machines.
Hally, Thomas, 10 Reade St., New York.—Counting Machines.
Hamblet Machine Co., Lawrence, Mass.—Paper Slitters.
Hamilton Mfg. Co., Middletown, N. Y.—Quoins.
Hardy, Wm. A., & Sons, Co., Fitchburg, Mass.—Screen Plates.
Harris Automatic Press Co., Niles, O.—Printing Presses.
Hart, R. A., & Co., Battle Creek, Mich.—Counting Machines.
Hatch, Frank E., 91-93 Thompson St., New York.—Paper Box Printers.
Hempel & Dingens, Buffalo, N. Y.—Quoins.
Herrick & Cowell, New Haven, Conn.—Electrotyping, etc., Machinery.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.—Bookbinders' Machinery.
Hobbs Manufacturing Co., Worcester, Mass.—Paper Box Machinery.
Hoe, R., & Co., 504 Grand St., New York.—Printing Presses, etc.
Holyoke Machine Co., Holyoke, Mass.—Beating and Washing Engines.
Hoole Machine & Engraving Works, 29 Prospect St., Brooklyn, N. Y.—Paging and Numbering Machines.
Hope, John, & Son, Engraving & Mfg. Co., Providence, R. I.—Plate Engraving Machines.
Hopkinson Machine Works, Springfield, Mass.—Envelope Machines.
Horne, J. H., & Sons Co., Lawrence, Mass.—Fourdrinier Machines, etc.
Howard Iron Works, Buffalo, N. Y.—Stabbing Machines.
Huber-Hodgman Printing Press Co., Taunton, Mass.—Printing Presses.
Inman-American Box Machine Co., Amsterdam, N. Y.—Paper Box Machinery.
International Paper Box Machine Co., Nashua, N. H.—Gumming or Gluing Machines.
Jacques, John, & Son, Worcester, Mass.—Paper Slitters.
Jones, E. D., & Sons Co., Pittsfield, Mass.—Paper Mill Machinery.
Jones, Frank A., Co., 260 West Broadway, New York.—Die Presses, Paper Cutters, etc.
Kaukauna Machine Works, Kaukauna, Wis.—Wall Paper Machinery.
Kelsey Press Co., Meriden, Conn.—Card Cutters.
Kelton's, M. M., Son, 124 Baxter St., New York.—Embossing Machines.
Kent-Ryan Machine Co., 247 Centre St., New York.—Die Presses, Paper Cutters, etc.
Keystone Type Foundry, 9th and Spruce Sts., Philadelphia, Pa.—Ruling Machines.
Kidder, R. E., Worcester, Mass.—Envelope Machines.
Kidder Press Co., Dover, N. H.—Printing Presses, etc.

King, A. R., Mfg. Co., 532 W. 22d St., New York.—Copper Plate Printing Presses.
Kingsbury & Davis, 102 Pearl St., Boston, Mass.—Paper Box Machinery.
Knowlton & Beach, Rochester, N. Y.—Gluing and Pasting Machines, Paper Slitters.
Koegel, Charles, & Son, Holyoke, Mass.—Paper Saturating and Drying Machines.
Kramer Web Co., The Bourse, Philadelphia, Pa.—Paper Feeders.
Langston, Samuel M., 812 Winter St., Philadelphia, Pa.—Paper Box Machinery.
Lanston Monotype Machine Co., 137 W. 23d St., New York.—Type Casting and Setting Machines.
Latham Machinery Co., 197 So. Canal St., Chicago, Ill.—Bookbinders' Machinery.
Lester & Walley, Norwich, Conn.—Die Presses.
Liberty Machine Co., 140 Nassau St., New York.—Printing Presses, Tools, etc.
Lloyd, George E., & Co., Inc., 194 So. Clinton St., Chicago, Ill.—Electrotyping, etc., Machinery.
Lombard, A. O., Waterville, Me.—Paper Mill Machinery.
Lovejoy Co., 444 Pearl St., New York.—Electrotyping, etc., Machinery.
Lovell, Charles E., 6 Reade St., New York.—Book Trimming Machines.
Lynchard Square Lock Quoin Co., 284 Washington St., Newark, N. J.—Quoins.
McAdams, John, & Sons, 978 Kent Ave., Brooklyn, N. Y.—Paging and Numbering Machines.
Maigne, O. J., 358-360 Pearl St., New York.—Printers' Rollers.
Manitowoc Steam Boiler Works, Manitowoc, Wis.—Sulphite Pulp Machinery.
Marshall Engine Co., Turners Falls, Mass.—Jordan and Refining Engines.
Martenson, L., & Co., Chicago, Ill.—Bundling Machines.
Maxson Printing Press Co., Westerly, R. I.—Paper Feeders.
Mergenthaler Linotype Co., Tribune Bldg., New York.—Slug Casting Machines.
Miehle Printing Press & Mfg. Co., Clinton & Fulton Sts., Chicago, Ill.—Printing Presses, etc.
Millard, E. F., & Co., Waltham, Mass.—Pulp Screens.
Mills Machine Co., Lawrence, Mass.—Paper Mill Machinery.
Morgans & Wilcox Mfg. Co., Middletown, N. Y.—Electrotyping, etc., Machinery, etc.
Moore & Warren, 57 John St, New York.—Quoins.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.—Cylinder and Fourdrinier Machines, etc.
Morrison, J. L., Co., 60 Duane St., New York.—Wire Stitching Machines.
Murray Machinery Co., 431 West 5th St., Kansas City, Mo.—Electrotyping, etc., Machines.
National Box Machine Co., Lynn, Mass.—Paper Box Machinery.
National Machine Co., Hartford, Conn.—Printing Presses, etc.
National Mfg. Co., Elkhart, Ind.—Printing Presses, etc.
Nevin & Wetmore Iron Works, Lowville, N. Y.—Wood Pulp Machinery.
Newhall, George M., Engineering Co., Ltd., 136 So. 4th St., Philadelphia, Pa.—Sulphite Pulp Machinery.
New Jersey Wire Stitching Machine Co., Camden, N. J.—Wire Stitching Machines.
New York Stencil Works, 100 Nassau St., New York.—Numbering Machines.
Nichols & Langworthy Machine Co., Hope Valley, R. I.—Printing Presses.

Noble & Wood Machine Co., Hoosick Falls, N. Y.—Beating and Washing Engines, etc.
Non-Antem Sulphite Digester Co., 41 Park Row, New York.—Sulphite Pulp Machinery.
Norwood Engineering Co., Florence, Mass.—Calenders, Dusters, etc.
Ohl Automatic Machine Co., Newark, N. J.—Lithographers' Machinery.
Olmesdahl, C., 176 Grand St., New York.—Printing Presses.
Osgood, J. H., & Co., 100 Milk St., Boston, Mass.—Printers' Rollers.
Ostrander-Seymour Co., Tribune Bldg., Chicago, Ill.—Printing Presses.
Oswego Machine Works, Oswego, N. Y.—Paper Cutters.
Peerless Printing Press Co., Palmyra, N. Y.—Printing Presses, etc.
Penney, C. W., & Son, Mechanic Falls, Me.—Grinders.
Piper, E. J., 44 Hampden St., Springfield, Mass.—Ruling Machines.
Platen Press Roller Adjuster Co., Charleston, S. C.—Roller Adjusters.
Plimpton, H. M., & Co., Norwood, Mass.—Signature Presses.
Portland Co., Inc., Portland, Me.—Sulphite Pulp Machinery.
Potter Printing Press Co., Plainfield, N. J.—Printing Presses.
Premier Machine & Engraving Works, 164 William St., New York.—Numbering Machines.
Pusey & Jones Co., Wilmington, Del.—Paper Mill Machinery.
Ranney, Wm. H., Detroit, Mich.—Printers' Rollers.
Rice, Barton & Fales Machine & Iron Co., Worcester, Mass.—Paper Mill Machinery.
Robinson, John T., & Co., Hyde Park, Mass.—Paper Box Machinery.
Rockford Folding Machine Co., Rockford, Ill.—Paper Folders.
Rockstroh Mfg. Co., Atlantic Ave. & Chestnut St., Brooklyn, N. Y.—Plate Holding Blocks.
Rogers, Samuel C., & Co., Buffalo, N. Y.—Paper Bag Machines.
Root, Charles J., Bristol, Conn.—Counting Machines.
Rosback, F. P., 2529 Leo St., Chicago, Ill.—Bookbinders' Machinery.
Rouse, H. B., & Co., 158 E. Huron St., Chicago, Ill.—Lead and Rule Cutters.
Rowe, James, 241 So. Jefferson St., Chicago, Ill.—Roller Making Machines.
Royle, John, & Sons, Paterson, N. J.—Electrotyping, etc., Machines.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.—Cylinder and Fourdrinier Machines, etc.
Saranac Electric Mfg. Co., St. Joseph, Mo.—Wire Stitching Machines.
Schley, Fred, & Co., 56 Beekman St., New York.—Plate Holding Blocks.
Schniedewend, Paul, & Co., 118 West Jackson Blvd., Chicago, Ill.—Electrotyping, etc., Machines.
Scott, Olin, Bennington, Vt.—Wet Machines, Screens, etc.
Scott, Walter & Co., Plainfield, N. J.—Printing Presses.
Semple, M. H., & Co., Lowell, Mass.—Book Trimming Machines.
Seybold Machine Co., Dayton, O.—Bookbinders' Machinery.
Shartle & Bevis Machine Co., Middletown, O.—Rag Cutters.
Sheridan, T. W. & C. B., 56 Duane St., New York.—Bookbinders' Machinery.
Sidney Folder Co., Sidney, O.—Paper Folders.
Smith, C. H., & Co., Holyoke, Mass.—Dandy Rolls.
Smith & Winchester Co., South Windham, Conn.—Cylinder and Fourdrinier Machines, etc.
Smyth, Joseph E., 411 Dearborn St., Chicago, Ill.—Book Sewing Machines.
Smyth Mfg. Co., Hartford, Con.—Bookbinders' Machinery.
Southworth Bros., Portland, Me.—Paper Cutters.
Standard Machinery Co., Mystic, Conn.—Die Presses, Embossing Machines, etc.
Stebbins, H. W. & G. A., Watertown, N. Y.—Sulphite Pulp Machinery.

Stevens, Samuel, 173 Fort Hill Square, Boston, Mass.—Printers' Tools.
Stimpson, Edwin B., & Son, 31 Spruce St., New York.—Perforating Machines, etc.
Tatum, Samuel C., Co., Cincinnati, O.—Punches, Cutters, etc.
Taylor, Stiles & Co., Riegelsville, N. J.—Rag Cutters.
Tennis, Augustus H., 108 East 16th St., New York.—Book Sewing Machines.
Thomson, John, Press Co., 253 Broadway, New York.—Printing Presses.
Toledo Machine & Tool Co., Toledo, O.—Shipping Tag Machines.
Trevor Mfg. Co., Lockport, N. Y.—Wet Machines, Grinders, etc.
Turners Falls Machine Co., Turners Falls, Mass.—Paper Mill Mchy.
Tyler, W. S., Co., Cleveland, O.—Fourdrinier Wires.
Tympalyn Co., 246 Summer St., Boston, Mass.—Plate Holding Blocks.
Union Machine Co., Fitchburg, Mass.—Paper Mill Machinery.
United States Automatic Box Machinery Co., 176 Federal St., Boston, Mass.—Automatic Box Machines.
Unitype Co., 148 Sands St., Brooklyn, N. Y.—Type Setting Machines.
Valley Iron Works Co., Appleton, Wis.—Grinders.
Van Bibber Roller Co., Cincinnati, O.—Printers' Rollers.
Walker, W. G., & Co., Madison, Wis.—Printing Presses.
Wanner, A. F., & Co., 298 Dearborn St., Chicago, Ill.—Printers' Tools.
Wesel, F., Mfg. Co., 82 Fulton St., New York.—Electrotyping, etc., Machines.
Westcott-Jewell Co., Seneca Falls, N. Y.—Quoins.
Wetter Numbering Machine Co., 331 Classon Ave., Brooklyn, N. Y.—Type High Numbering Machines.
White, S. K., Co., Batavia, Ill.—Paging and Numbering Machines.
Whitlock Printing Press Mfg. Co., 41 Park Row, New York.—Printing Presses.
Wickersham Quoin Co., Boston, Mass.—Quoins.
Wild & Stevens, 148 Congress St., Boston, Mass.—Printers' Rollers.
Wilson Paper Box Machinery Co., 133 So. Clinton St., Chicago, Ill.—Paper Box Machinery.
Windsor Locks Machine Co., Windsor Locks, Conn.—Jordan and Refining Engines, etc.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.—Pamphlet Covering Machines.
Wood, O. V., Fostoria, O.—Wall Paper Machinery.

PRINTING MACHINERY.

1 BOOK BINDING MACHINERY.

2 **BACKING MACHINES.** For holding books while being backed.

Crawley Book Machinery Co., Inc., Newport, Ky.

Ellis, William F., 174 Centre St., New York.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.

3 **BACKING AND ROUNDING MACHINES.** For rounding backs automatically.

Crawley Book Machinery Co., Inc., Newport, Ky.

4 **BENDING MACHINES, METAL.** For bending the metal binding of calendars, etc.

Latham Machinery Co., 197 S. Canal St., Chicago, Ill.

5 **BEVELING MACHINES.**

Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.

6 **BUNDLING MACHINES.** See 23, Signature Presses.

7 **CASE MAKERS.** For completing in one operation the process of making cloth cases.

Sheridan, T. W. & C. B., 56 Duane St., New York.
Smyth Mfg. Co., Hartford, Conn.

8 **CASE SMOOTHING MACHINES.** For smoothing cloth cases.

Fuller, E. C., Co., 28 Reade St., New York.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Smyth Mfg. Co., Hartford, Conn.

9 **COVERING MACHINES, PAMPHLET.** For binding magazines, etc.

Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Wold, Torris, & Co., 66-70 N. Jefferson St., Chicago, Ill.

10 **CUTTERS, INDEX.** For cutting indexes on blank books, etc.

Braidwood, J. W., 207 Centre St., New York.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Morrison, J. L., Co., 60 Duane St., New York.
Rosback, F. P., 2529 Leo St., Chicago, Ill.

11 **Rotary Board.** For cutting book covers.

Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Standard Machinery Co., Mystic, Conn.

12 **Round Corner.**

Chambers Bros. Co., 52d St., below Lancaster Ave., Philda.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Rosback, F. P., 2529 Leo St., Chicago, Ill.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Southworth Bros., Portland, Me.
Tatum, Samuel C., Co., Cincinnati, O.

13 **ENVELOPE MACHINES.** See 20, Die Presses.

14 **EYELETTING MACHINES.** For punching eyelets in paper.

Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Stimpson, Edwin B., & Son, 31 Spruce St., New York.
Tatum, Samuel C., Co., Cincinnati, O.

15 **GLUING AND PASTING MACHINES.**

Chambers Bros. Co., 52d St., below Lancaster Ave., Philda.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Knowlton & Beach, Rochester, N. Y.
Smyth Mfg. Co., Hartford, Conn.

16 **PAGING AND NUMBERING MACHINES.** For numbering the pages of books.

Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
McAdams, John, & Sons, 978 Kent Ave., Brooklyn, N. Y.
White, S. K., Co., Batavia, Ill.

17 **PAPER BAG MACHINES.** See 20, Die Presses.

18 **PERFORATING MACHINES.**

Black-Clawson Co., Hamilton, O.
Blackhall Mfg. Co., 16 Lock St., Buffalo, N. Y.
Burton's, A. G., Sons, 42 S. Clinton St., Chicago, Ill.
Ellison Bros., 2213 Bridge St., Frankford, Philadelphia, Pa.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Rosback, F. P., 2529 Leo St., Chicago, Ill.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Stimpson, Edwin B., & Son, 31 Spruce St., New York.

19 **PRESSES, BLOCKING.** For blocking or bundling bill heads, memorandum pads, etc.

Hickok, W. O., Mfg. Co., Harrisburg, Pa.

PRESSES, BLOCKING, continued

Sheridan, T. W. & C. B., 56 Duane St., New York.

20 **Die.** For cutting by means of dies; used in making envelopes, shipping tags, etc.

Blackhall Mfg. Co., 16 Lock St., Buffalo, N. Y.
Ermold, Edward, 652 Hudson St., New York.
Hopkinson Machine Works, Springfield, Mass.
Jones, Frank A., Co., 260 West Broadway, New York.
Kent-Ryan Machine Co., 247-249 Centre St., New York.
Kidder, R. E., Worcester, Mass.
Kidder Press Co., Dover, N. H.
Lester & Wally, Norwich, Conn.
National Mfg. Co., Elkhart, Ind.
Rogers, Samuel C., & Co., Buffalo, N. Y.
Rosbach, F. P., 2529 Leo St., Chicago, Ill.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Standard Machinery Co., Mystic, Conn.
Tatum, Samuel C., Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

21 **Embossing.** For lettering, stamping and embossing.

Blackhall Mfg. Co., 16 Lock St., Buffalo, N. Y.
Carver, C. R., Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Kelton's, M. M., Son, 124 Baxter St, New York.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
National Machine Co., Hartford, Conn.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Standard Machinery Co., Mystic, Conn.

22 **Gilding.**

Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Sheridan, T. W. & C. B., 56 Duane St., New York.

23 **Signature.** For bundling signatures.

Central Machine Works, 327 Dearborn St., Chicago, Ill.
Crawley Book Machinery Co., Newport, Ky.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Martenson, L., & Co., Chicago, Ill.
Plimpton, H. M., & Co., Norwood, Mass.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.

24 **Smashing.** Quick acting presses for flattening books.

Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Standard Machinery Co., Mystic, Conn.

25 **Standing.**

Blackhall Mfg. Co., 16 Lock St., Buffalo, N. Y.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Seybold Machine Co., Dayton, O.

PRESSES, STANDING, continued

Sheridan, T. W. & C. B., 56 Duane St., New York.
Standard Machinery Co., Mystic, Conn.

26 **PUNCHES.** For punching holes in loose leaf ledger sheets, cards for card indexes, etc.

Gether-Drebert-Perkins Co., Milwaukee, Wis.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Rosback, F. P., 2529 Leo St., Chicago, Ill.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Tatum, Samuel C., Co., Cincinnati, O.

27 **RULING MACHINES.**

Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Keystone Type Foundry, 9th & Spruce Sts., Philadelphia, Pa.
McAdams, John, & Sons, 978 Kent Ave., Brooklyn, N. Y.
Piper, E. J., Springfield, Mass.

28 **SAWING MACHINES.** For sawing the backs of books.

Chambers Bros. Co., 52d St., below Lancaster Ave., Philda.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Royle, John, & Sons, Paterson, N. J.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Smyth Mfg. Co., Hartford, Conn.

29 **SHEARS, BINDERS'.** For cutting binders' boards.

Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.

30 **Table.**

Blackhall Mfg. Co., Buffalo, N. Y.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Jacques, John, & Son, Worcester, Mass.
Langston, Samuel M., 812 Winter St., Philadelphia, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.

31 **SHIPPING TAG MACHINES.** See 20, Die Presses.

32 **STABBING MACHINES.** For piercing and stabbing holes in paper.

Challenge Machinery Co., Grand Haven, Mich.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.

33 **Paper Drills.** For drilling holes in paper.

Chapin-Love Machine Co., New Orange, N. J.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.

34 **STITCHING MACHINES, THREAD.** For sewing books with thread.

Smyth, Joseph E., 411 Dearborn St., Chicago, Ill.
Smyth Mfg. Co., Hartford, Conn.
Tennis, Augustus H., 108 E. 16th St., New York.

35 **Wire.** In which wire staples are used instead of thread.

Acme Staple Co., 500 N. 12th St., Philadelphia, Pa.

STITCHING MACHINES, WIRE, continued

Beck, Charles, Paper Co., Ltd., 609 Chestnut St., Philda.
Boston Wire Stitcher Co., 176 Summer St., Boston, Mass.
Brown, R. H., & Co., New Haven, Conn.
Chambers Bros. Co., 52d St. below Lancaster Ave., Philda.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Morrison, J. L., Co., 60 Duane St., New York.
New Jersey Wire Stitching Machine Co., Camden, N. J.
Rosback, F. P., 2529 Leo St., Chicago, Ill.
Saranac Electric Mfg. Co., St. Joseph, Mo.

36 **TRIMMING MACHINES.** For trimming the edges of books and pamphlets.

Lovell, Charles E., 12 Reade St., New York.
Semple, M. H., & Co., Lowell, Mass.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.

---

37 PAPER BOX MACHINERY.

38 **AUTOMATIC BOX MACHINES.** For making cartons, etc.
Automatic Box Machinery Concern, 270 Congress St., Boston, Mass.

Griswold, George M., New Haven, Conn.
Inman-American Box Machine Co., Amsterdam, N. Y.
United States Automatic Box Machinery Co., 176 Federal St., Boston, Mass.

39 **CHOPPERS.** For chopping tubes, etc.; also for cutting end pieces from waste strips.
Hobbs Mfg. Co., Worcester, Mass.
Robinson, John T., & Co., Hyde Park, Mass.

40 **COVERING AND TOPPING MACHINES.**

Hobbs Mfg. Co., Worcester, Mass.
Langston, Samuel M., 812 Winter St., Philadelphia, Pa.
National Box Machine Co., Lynn, Mass.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

41 **CREASING MACHINES.** For making suit boxes, cartons, etc.

Hobbs Mfg. Co., Worcester, Mass.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

42 **CUTTERS.** For cutting stock into various forms.

Hobbs Mfg. Co., Worcester, Mass.
Inman-American Box Machine Co., Amsterdam, N. Y.
Knowlton & Beach, Rochester, N. Y.
Langston, Samuel M., 812 Winter St., Philadelphia, Pa.
Robinson, John T., & Co., Hyde Park, Mass.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

CUTTERS, continued

43 **Scorers.** For cutting across the face of boards.

Hobbs Mfg. Co., Worcester, Mass.
Knowlton & Beach, Rochester, N. Y.
Langston, Samuel M., 812 Winter St., Philadelphia, Pa.
Robinson, John T., & Co., Hyde Park, Mass.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

44 **ENDING MACHINES.** For closing the ends of paper boxes.

Blessing, Louis, 508 N. Mechanic St., Jackson, Mich.
Hobbs Mfg. Co., Worcester, Mass.
Inman-American Box Machine Co., Amsterdam, N. Y.
Kingsbury & Davis, 102 Pearl St., Boston, Mass.
National Box Machine Co, Lynn, Mass.

45 **GLUING MACHINES.**

Hobbs Mfg. Co., Worcester, Mass.
Inman-American Box Machine Co., Amsterdam, N. Y.
International Paper Box Machine Co., Nashua, N. H.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

46 **PAPER TUBE ROLLING MACHINES.**

Knowlton & Beach, Rochester, N. Y.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

47 **PRINTERS, PAPER BOX.** For printing the ends, etc., of paper boxes.

Harris Automatic Press Co., Niles, O.
Hatch, Frank E., 91 Thomson St., New York.
Inman-American Box Machine Co., Amsterdam, N. Y.

48 **TRIMMING MACHINES.** For trimming skeleton work.
Hobbs Mfg. Co., Worcester, Mass.
Jones, Frank A., Co., 260 West Broadway, New York.

---

49 PAPER CUTTING MACHINES.

Challenge Machinery Co., Grand Haven, Mich.
Chandler & Price Co., Cleveland, O.
Child-Acme Cutter & Press Co., 33 Kemble St., Boston, Mass.
Eardley & Winterbottom, 125 Worth St., New York.
Fuller, E. C., Co., 28 Reade St., New York.
Jones, Frank A., Co., 260 W. Broadway, New York.
Kent-Ryan Machine Co., 247 Centre St., New York.
Kidder Press Co., Dover, N. H.
Langston, Samuel M., 812 Winter St., Philadelphia, Pa.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Morgans & Wilcox Mfg. Co., Middletown, N. Y.
Oswego Machine Works, Oswego, N. Y.
Peerless Printing Press Co., Palmyra, N. Y.
Rosback, F. P., 2529 Leo St., Chicago, Ill.
Schniedewend, Paul, & Co., 118 W. Jackson Blvd., Chicago..

PAPER CUTTERS, continued

Semple, M. H., & Co., Lowell, Mass.
Seybold Machine Co., Dayton, O.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Smith & Winchester Co., South Windham, Conn.
Standard Machinery Co., Mystic, Conn.
Tatum, Samuel C., Co., Cincinnati, O.
White, S. K., Co., Batavia, Ill.

50 **AUTOMATIC REAM CUTTERS.**

Beloit Iron Works, Beloit, Wis.
Black-Clawson Co., Hamilton, O.
Dilts Machine Works, Fulton, N. Y.

51 **CARD CUTTERS.**

Bradley, Milton Co., Springfield, Mass.
Hoe, R., & Co., 504 Grand St., New York.
Kelsey Press Co., Meriden, Conn.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Sheridan, T. W. & C. B., 56 Duane St., New York.

52 **LEVER PAPER CUTTERS.** See 49, Paper Cutting Machines.

53 **PAPER SLITTING MACHINES.** For cutting stock in strips.

Black-Clawson Co., Hamilton, O.
Clark, H. C., & Son, Machine Co., Lee, Mass.
Downington Mfg. Co., East Downington, Pa.
Hamblet Machine Co., Lawrence, Mass.
Hobbs Mfg. Co., Worcester, Mass.
Horne, J. H., & Sons Co., Lawrence, Mass.
Inman-American Box Machine Co., Amsterdam, N. Y.
Jacques, John, & Son, Worcester, Mass.
Kaukauna Machine Works, Kaukauna, Wis.
Knowlton & Beach, Rochester, N. Y.
Koegel, Charles, & Son, Holyoke, Mass.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Rice, Barton & Fales Machine & Iron Co., Worcester, Mass.
Robinson, John T., & Co., Hyde Park, Mass.
Sheridan, T. W. & C. B., 56 Duane St., New York.
Smyth Mfg. Co., Hartford, Conn.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

54 **SLITTING AND REWINDING MACHINES.** For cutting stock in strips and winding these in rolls.

Bellows Falls Machine Co., Bellows Falls, Vt.
Jacques, John, & Sons, Worcester, Mass.
Kidder Press Co., Dover, N. H.
Hobbs Mfg. Co., Worcester, Mass.
Langston, Samuel M., 812 Winter St., Philadelphia, Pa.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

---

55 PAPER FEEDING MACHINES.

American Paper Feeder Co., 255 Atlantic Ave., Boston, Mass.
Dexter Folder Co., Pearl River, N. Y.

PAPER FEEDERS, continued

Fuller, E. C., Co., 28 Reade St., New York.
Kramer Web Co., The Bourse, Philadelphia, Pa.
McAdams, John, & Sons, 978 Kent Ave., Brooklyn, N. Y.
Maxson Printing Press Co., Westerly, R. I.
Sheridan, T. W. & C. B., 56 Duane St., New York.

---

56 PAPER FOLDING MACHINES.

Bascom Eclipse Folder Co., Sidney, O.
Brown Folding Machine Co., Erie, Pa.
Central Machine Works, 327 Dearborn St., Chicago, Ill.
Chambers Bros. Co., 52d St., below Lancaster Ave., Philda.
Dexter Folder Co., Pearl River, N. Y.
Empire Folding Machine Co., Palmyra, N. Y.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Rockford Folding Machine Co., Rockford, Ill.
Sidney Folder Co., Sidney, O.

---

57 PAPER MILL MACHINERY.

58 AGITATORS.

Jones, E. D., & Sons Co., Pittsfield, Mass.
Mills Machine Co., Lawrence, Mass.
Pusey & Jones Co., Wilmington, Del.
Scott, Olin, Bennington, Vt.

59 BARKERS. For stripping the bark from wood in pulp mills.

Baker & Shevlin Co., Saratoga Springs, N. Y.
Carthage Machine Co., Carthage, N. Y.
Friction Pulley & Machine Co., Sandy Hill, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Lombard, A. O., Waterville, Me.
Nevin & Wetmore Iron Works, Lowville, N. Y.
Portland Co., Inc., Portland, Me.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.
Trevor Mfg. Co., Lockport, N. Y.

60 BEATING AND WASHING ENGINES.

Baker & Shevlin Co., Saratoga Springs, N. Y.
Clark, H. C., & Son, Machine Co., Lee, Mass.
Currier, Cyrus, & Sons, Newark, N. J.
Dayton Globe Iron Works, Dayton, O.
Dillon Machine Co., Lawrence, Mass.
Downington Mfg. Co., East Downington, Pa.
Dilts Machine Works, Fulton, N. Y.

BEATING AND WASHING ENGINES, continued

Emerson Mfg. Co., Lawrence, Mass.
Holyoke Machine Co., Holyoke, Mass.
Horne, J. H., & Sons Co., Lawrence, Mass.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Mills Machine Co., Lawrence, Mass.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Pusey & Jones Co., Wilmington, Del.
Union Machine Co., Fitchburg, Mass.

61 **CALENDERS.** For giving a smooth finish to paper.

Beloit Iron Works, Beloit, Wis.
Birmingham Iron Foundry, Derby, Conn.
Black-Clawson Co., Hamilton, O.
Clark, H. C., & Son Machine Co., Lee, Mass.
Downington Mfg. Co., East Downington, Pa.
Farrell Foundry & Machine Co., Ansonia, Conn.
Holyoke Machine Co., Holyoke, Mass.
Mills Machine Co., Lawrence, Mass.
Norwood Engineering Co., Florence, Mass.
Pusey & Jones Co., Wilmington, Del.
Rice, Barton & Fales Machine & Iron Co., Worcester, Mass.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.
Smith & Winchester Co., South Windham, Conn.

62 **CHIPPERS.** For converting wood to chips.

Baker & Shevlin Co., Saratoga Springs, N. Y.
Friction Pulley & Machine Works, Sandy Hill, N. Y.
Lombard, A. O., Waterville, Me.
Portland Co., Inc., Portland, Me.
Pusey & Jones Co., Wilmington, Del.
Union Machine Co., Fitchburg, Mass.

63 **CORRUGATING MACHINES, PAPER.** In which the paper is taken in rolls, corrugated and glued to a lining.

Langston, Samuel M., 812 Winter St., Philadelphia, Pa.

64 **CRUSHERS.** For crushing pulp.

Lombard, A. O., Waterville, Me.

65 **CYLINDER AND FOURDRINIER MACHINES.** In which the stock passes between several sets of calender rolls.

Bagley & Sewall Co., Watertown, N. Y.
Bellows Falls Machine Co., Bellows Falls, Vt.
Beloit Iron Works, Beloit, Wis.
Black-Clawson Co., Hamilton, O.
Clark, H. C., & Son Machine Co., Lee, Mass.
Downington Mfg. Co., East Downington, Pa.
Horne, J. H., & Sons Co., Lawrence, Mass.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.
Pusey & Jones Co., Wilmington, Del.
Rice, Barton & Fales Machine & Iron Co., Worcester, Mass.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.
Smith & Winchester Co., South Windham, Conn.
Union Machine Co., Fitchburg, Mass.

66 **DRYING MACHINES.** For drying pulp.

Bellows Falls Machine Co., Bellows Falls, Vt.

DRYING MACHINES, continued

Black-Clawson Co., Hamilton, O.
Mills Machine Co., Lawrence, Mass.
Rice, Barton & Fales Machine & Iron Co., Worcester, Mass.
Smith & Winchester Co., South Windham, Conn.
Windsor Locks Machine Co., Windsor Locks, Conn.

67 **DUSTERS.** For cleaning rags by dusting or fanning.

Holyoke Machine Co., Holyoke, Mass.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Norwood Engineering Co., Florence, Mass.
Pusey & Jones Co., Wilmington, Del.
Windsor Locks Machine Co., Windsor Locks, Conn.

68 **GRINDERS.** For grinding wood in paper mills.

Bagley & Sewall Co., Watertown, N. Y.
Baker & Shevlin Co., Saratoga Springs, N. Y.
Beloit Iron Works, Beloit, Wis.
Carthage Machine Co., Carthage, N. Y.
Dilts Machine Works, Fulton, N. Y.
Friction Pulley & Machine Co., Sandy Hill, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Nevin & Wetmore Iron Works, Lowville, N. Y.
Penney, C. W., & Son, Mechanic Falls, Me.
Pusey & Jones Co., Wilmington, Del.
Scott, Olin, Bennington, Vt.
Trevor Mfg. Co., Lockport, N. Y.
Turners Falls Machine Co., Turners Falls, Mass.
Valley Iron Works Co., Appleton, Wis.

69 **JORDAN AND REFINING ENGINES.**

Appleton Machine Co., Appleton, Wis.
Black-Clawson Co., Hamilton, O.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Horne, J. H., & Sons Co., Lawrence, Mass.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Marshall Engine Co., Turners Falls, Mass.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Smith & Winchester Co., South Windham, Conn.
Union Machine Co., Fitchburg, Mass.
Windsor Locks Machine Co., Windsor Locks, Conn.

70 **PAPER MACHINERY ACCESSORIES.**

71 **Calender Rolls.**

Beloit Iron Works, Beloit, Wis.
Farrell Foundry & Machine Co., Ansonia, Conn.
Rice, Barton & Fales Machine & Iron Co., Worcester, Mass.

72 **Dandy Rolls.**

Bigelow, Cheney, Wire Works, Springfield, Mass.
Brown & Sellers Co., Holyoke, Mass.
Buchanan & Bolt Wire Co., Holyoke, Mass.
De Witt Wire Cloth Co., 17 Warren St., New York.
Eastwood Wire Mfg. Co., Belleville, N. J.
Gleeson, Thomas E., East Newark, N. J.

DANDY ROLLS, continued

Globe Wire Co., Harrison, N. J.
Smith, C. H., & Co., Holyoke, Mass.

73 **Fourdrinier Wires.**

Bigelow, Cheney, Wire Works, Springfield, Mass.
Brown & Sellers Co., Holyoke, Mass.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, William, 43 Fulton St., New York.
De Witt Wire Cloth Co., 17 Warren St., New York.
Eastwood Wire Mfg. Co., Belleville, N. J.
Tyler, W. S., Co., Cleveland, O.

74 **GRINDERS, CALENDER ROLL.** See Roll Grinding Machines in Finding List.

75 **Guard Boards.** For Jordan engines.

Pusey & Jones Co., Wilmington, Del.
Union Machine Co., Fitchburg, Mass.

76 **Paper Stops.** Attachments on the reel drum of paper winders which keep rolls from telescoping on the reel.
Turners Falls Machine Co., Turners Falls, Mass.

77 **Screen Plates.**

Appleton Screen Plate Co., Appleton, Wis.
Bellows Falls Screen Plate Co., Bellows Falls, Vt.
Eastwood Wire Mfg. Co., Belleville, N. J.
Hardy, Wm. A., & Sons Co., Fitchburg, Mass.
Union Machine Co., Fitchburg, Mass.

78 **Spool Slotters.** For slotting the ends of cores.

Nevin & Wetmore Iron Works, Lowville, N. Y.

79 **Stretchers.** For stretching the jackets on paper machines.

Turners Falls Machine Co., Turners Falls, Mass.

80 **PAPER SATURATING AND DRYING MACHINES.**

Black-Clawson Co., Hamilton, O.
Koegel, Charles, & Son, Holyoke, Mass.
Wilson Paper Box Mchy. Co., 133 S. Clinton St., Chicago, Ill.

81 **PRESSES, PULP BALING.** See Finding List.

82 **RAG CUTTERS.**

Black-Clawson Co., Hamilton, O.
Clark, H. C., & Son Machine Co., Lee, Mass.
Daniels Machine Co., Woodstock, Vt.
Holyoke Machine Co., Holyoke, Mass.
Mills Machine Co., Lawrence, Mass.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Pusey & Jones Co., Wilmington, Del.
Shartle & Bevis Machine Co., Middletown, O.
Taylor, Stiles & Co., Riegelsville, N. J.
Windsor Locks Machine Co., Windsor Locks, Conn.

83 **SCREENS.** For separating slivers from ground wood pulp.

Baker & Shevlin Co., Saratoga Springs, N. Y.
Beloit Iron Works, Beloit, Wis.
Black-Clawson Co., Hamilton, O.
Brownville Iron Works, Brownville, N. Y.
Carthage Machine Co., Carthage, N. Y.
Downington Mfg. Co., East Downington, Pa.
Friction Pulley & Machine Co., Sandy Hill, N. Y.
Millard, E. F., & Co., Waltham, Mass.
Nevin & Wetmore Iron Works, Lowville, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Pusey & Jones Co., Wilmington, Del.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.
Scott, Olin, Bennington, Vt.
Turners Falls Machine Co., Turners Falls, Mass.

84 **SULPHITE PULP MACHINERY.** For reducing wood to pulp by a chemical process.

Kaukauna Machine Works, Kaukauna, Wis.
Manitowoc Steam Boiler Works, Manitowoc, Wis.
Newhall, George M., Engineering Co., Ltd., 136 S. 4th St., Philadelphia, Pa.
Non-Antem Sulphite Digester Co., 41 Park Row, New York.
Portland Co., Inc., Portland, Me.
Pusey & Jones Co., Wilmington, Del.
Stebbins, H. W. & G. A., Watertown, N. Y.

85 **WET MACHINES.** In which stock is treated by chemicals, etc.
Appleton Machine Co., Appleton, Wis.

Bagley & Sewall Co., Watertown, N. Y.
Baker & Shevlin Co., Saratoga Springs, N. Y.
Black-Clawson Co., Hamilton, O.
Carthage Machine Co., Carthage, N. Y.
Clark, H. C., & Son Machine Co., Lee, Mass.
Downington Mfg. Co., East Downington, Pa.
Friction Pulley & Machine Co., Sandy Hill, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Horne, J. H., & Sons Co., Lawrence, Mass.
Mills Machine Co., Lawrence, Mass.
Nevin & Wetmore Iron Works, Lowville, N. Y.
Pusey & Jones Co., Wilmington, Del.
Sandy Hill Iron & Brass Works, Sandy Hill, N. Y.
Scott, Olin, Bennington, Vt.
Trevor Mfg. Co., Lockport, N. Y.

86 **WINDERS, PAPER.** For winding paper on drums or rolls.

Black-Clawson Co., Hamilton, O.
Downington Mfg. Co., East Downington, Pa.
Koegel, Charles, & Son, Holyoke, Mass.
Rice, Barton & Fales Machine & Iron Co., Worcester, Mass.
Turners Falls Machine Co., Turners Falls, Mass.
Windsor Locks Machine Co., Windsor Locks, Conn.

87 PRINTING MACHINERY.

88 **BEVELING MACHINES.** See 89, Electrotyping and Stereotyping Machinery.

89 **ELECTROTYPING AND STEREOTYPING MACHINERY.**

Goss Printing Press Co., 16th St. & Ashland Ave., Chicago.

Herrick & Cowell, New Haven, Conn.
Hoe, R., & Co., 504 Grand St., New York.
Lloyd, Geo. E., & Co., Inc., 194 S. Clinton St., Chicago, Ill.
Lovejoy Co., 444 Pearl St., New York.
Morgans & Wilcox Mfg. Co., Middletown, N. Y.
Murray Machinery Co., 431 W. 5th St., Kansas City, Mo.
National Mfg. Co., Elkhart, Ind.
Ostrander-Seymour Co., Tribune Bldg., Chicago, Ill.
Royle, John, & Sons, Paterson, N. J.
Schniedewend, Paul, & Co., 118 W. Jackson Blvd., Chicago.
Wesel, F., Mfg. Co., 82 Fulton St., New York.

90 **Stereotype Plate Machines.** For making electrotype and stereotype plates.

Campbell Printing Press & Mfg. Co., 1 Madison Ave., N. Y.
Murray Machinery Co., 431 W. 5th St., Kansas City, Mo.
Wesel, F., Mfg. Co., 82 Fulton St., New York.

91 **ENGRAVING MACHINES, PLATE.**

Francis, A. E., Cleveland, O.
Gorton, Geo., Machine Co., Racine, Wis.
Hope, John, & Son, Engraving & Mfg. Co., Providence, R. I.

92 **LITHOGRAPHERS' MACHINERY.**

Fuchs & Lang Mfg. Co., Rutherford, N. J.
Ohl Automatic Machine Co., Newark, N. J.

93 **NUMBERING MACHINES, TYPE HIGH.** For printing numbers on tickets, etc.

Bates Machine Co., 346 Broadway, New York.
Force, Wm. A., & Co., 59 Beekman St., New York.
Hoole Machine & Engraving Works, 29 Prospect St., Brooklyn, N. Y.
New York Stencil Works, 100 Nassau St., New York.
Premier Machine & Engraving Works, 164 William St., N. Y.
Wetter Numbering Machine Co., 331 Classon Ave., Brooklyn, N. Y.

94 **PLANING MACHINES.** See 89, Electrotyping and Stereotyping Machinery.

95 **PRINTERS' TOOLS AND ACCESSORIES.**

Challenge Machinery Co., Grand Haven, Mich.
Chandler & Price Co., Cleveland, O.
Conner, Fendler & Co., 56 Beekman St., New York.
Damon & Peets, 44 Beekman St., New York.
Farmer, A. D., & Son Type Founding Co., 63 Beekman St., New York.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Hamilton Mfg. Co., Middletown, N. Y.

PRINTERS' TOOLS AND ACCESSORIES, continued

Hoe, R., & Co., 504 Grand St., New York.
Liberty Machine Co., 140 Nassau St., New York.
Stevens, Samuel, 173 Fort Hill Sq., Boston, Mass.
Wanner, A. F., & Co., 298 Dearborn St., Chicago, Ill.

96 **Blocks, Plate Holding.**

Andrews & Pitman, Hartford, Conn.
Challenge Machinery Co., Grand Haven, Mich.
Farmer, A. D., & Son Type Founding Co., 63 Beekman St., New York.
Hoe, R., & Co., 504 Grand St., New York.
Morgans & Wilcox Mfg. Co., Middletown, N. Y.
National Mfg. Co., Elkhart, Ind.
Rockstroh Mfg. Co., Atlantic Ave. & Chestnut St., Brooklyn.
Schley, Fred., & Co., 56 Beekman St., New York.
Tympalyn Co., 246 Summer St., Boston, Mass.
Wesel, F., Mfg. Co., 82 Fulton St., New York.

97 **Counting Machines.** For tallying the number of copies printed, etc.

Durant, W. N., Milwaukee, Wis.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Hally, Thos., 10 Reade St., New York.
Hart, R. A., & Co., Battle Creek, Mich.
Root, Charles J., Bristol, Conn.

98 **Cutters, Lead and Rule.** For cutting leads and slugs.

Chandler & Price Co., Cleveland, O.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Hoe, R., & Co., 504 Grand St., New York.
Rouse, H. B., & Co., 158 E. Huron St., Chicago, Ill.

99 **Mitering Machines.** For mitering brass rule.

Challenge Machinery Co., Grand Haven, Mich.
Chandler & Price Co., Cleveland, O.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Hoe, R., & Co., 504 Grand St., New York.
Wesel, F., Mfg. Co., 82 Fulton St., New York.

100 **Printers' Rollers.**

Bendernagel & Co., 521 Ludlow St., Philadelphia, Pa.
Bingham Bros. Co., 406 Pearl St., New York.
Bingham Bros., Philadelphia, Pa.
Bingham's, Samuel, Son, Mfg. Co., 201 S. Canal St., Chicago.
Bingham & Runge, Cleveland, O.
Chandler & Price Co., Cleveland, O.
Chicago Roller Co., 114-116 Sherman St., Chicago, Ill.
Crutsinger, C. W., St. Louis, Mo.
Dietz, Bernhard Co., Baltimore, Md.
Dodson Printers Supply Co., Atlanta, Ga.
Godfrey & Co., 909 Sansom St., Philadelphia, Pa.
Maigne, O. J., 358-360 Pearl St., New York.
Osgood, J. H., & Co., 100 Milk St., Boston, Mass.
Ranney, Wm. H., Detroit, Mich.
Van Bibber Roller Co., Cincinnati, O.
Wild & Stevens, 148 Congress St., Boston, Mass.

PRINTERS' TOOLS AND ACCESSORIES, continued.

101 **Proof Presses.**
Hoe, R., & Co., 504 Grand St., New York.
Latham Machinery Co., 197 S. Canal St., Chicago, Ill.
Liberty Machine Co., 140 Nassau St., New York.
Morgans & Wilcox Mfg. Co., Middletown, N. Y.
Schniedewend, Paul, & Co., 118 W. Jackson Blvd., Chicago.

102 **Quoins.** For fastening type in a chase or galley.
Hamilton Mfg. Co., Middletown, N. Y.
Hempel & Dingens, Buffalo, N. Y.
Lynchard Square Lock Quoin Co., 284 Washington St., Newark, N. J.
Moore & Warren, 57 John St., New York.
Westcott-Jewell Co., Seneca Falls, N. Y.
Wickersham Quoin Co., Boston, Mass.

103 **Roller Adjusters.**
Bingham's, Samuel, Son, Mfg. Co., 201 S. Canal St., Chicago.
Platen Press Roller Adjuster Co., Charleston, S. C.
Hickok, W. O., Mfg. Co., Harrisburg, Pa.

104 **Roller Making Machines.**
Rowe, James, 241 S. Jefferson St., Chicago, Ill.

105 **Rule Curving Machines.**
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Wesel, F., Mfg. Co., 82 Fulton St., New York.

106 **PRINTING PRESSES.**

107 **Copper Plate.** In which the plate is passed between a platen and a roller by the rotation of the latter.
Kelton's, M. M., Son, 124 Baxter St., New York.
King, A. R., Mfg. Co., 532 W. 22d St., New York.
Miehle Printing Press & Mfg. Co., Clinton & Fulton Sts., Chicago, Ill.

108 **Cylinder.** In which impressions are made from type or plates laid upon a bed which moves forward and backward under a rotating impression cylinder.
Aluminum Press Co., 41 Park Row, New York.
Babcock Printing Press Mfg. Co., New London, Conn.
Campbell Printing Press & Mfg. Co., 1 Madison Ave., N. Y.
Challenge Machinery Co., Grand Haven, Mich.
Cottrell, C. B., & Sons Co., 41 Park Row, New York.
Cranston Printing Press Co., Palmyra, N. Y.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Hoe, R., & Co., 504 Grand St., New York.
Huber-Hodgman Printing Press Co., Taunton, Mass.
Miehle Printing Press & Mfg. Co., Clinton & Fulton Sts., Chicago, Ill.
Potter Printing Press Co., Plainfield, N. J.
Scott, Walter, & Co., Plainfield, N. J.
Walker, W. G., & Co., Madison, Wis.
Whitlock Printing Press Mfg. Co., 41 Park Row, New York.

109 **Embossing.** For stamping raised designs on paper, etc.
Gally, M., Hartford, Conn.
Kelton's, M. M., Sons, 124 Baxter St., New York.
Thomson, John, Press Co., 253 Broadway, New York.

110 **Job.** For miscellaneous work.
Boston Printing Press Mfg. Co., 176 Federal St., Boston, Mass.
Braunsdorf, J. H., Pearl River, N. Y.
Challenge Machinery Co., Grand Haven, Mich.
Chandler & Price Co., Cleveland, O.
Gally, M., Hartford, Conn.

PRINTING PRESSES, JOB, continued

Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Gordon Press Works, Rahway, N. J.
Harris Automatic Press Co., Niles, O.
Hoe, R., & Co., 504 Grand St., New York.
Kidder Press Co., Dover, N. H.
Liberty Machine Co., 140 Nassau St., New York.
Miehle Printing Press & Mfg. Co., Clinton and Fulton Sts., Chicago, Ill.
National Machine Co., Hartford, Conn.
Nichols & Langworthy Machine Co., Hope Valley, R. I.
Olmesdahl, C., 176 Grand St., New York.
Peerless Printing Press Co., Palmyra, N. Y.
Thomson, John, Press Co., 253 Broadway, New York.

111 **Lithographic.** For printing from a lithographic stone instead of a type form.
Babcock Printing Press Mfg. Co., New London, Conn.
Campbell Printing Press & Mfg. Co., 1 Madison Ave., New York.
Cottrell, C. B., & Sons Co., 41 Park Row, New York.
Scott, Walter, & Co., Plainfield, N. J.

112 **Steel Plate.** For printing bank notes, etc.
Hoe, R., & Co., 504 Grand St., New York.

113 **Two Revolution.** See 108, Cylinder Presses.

114 **Web Perfecting.** In which the paper is used in the roll or web, the printing being done on both sides of the sheet at once, the latter being folded before delivery.
Cottrell, C. B., & Sons Co., 41 Park Row, New York.
Duplex Printing Press Co., Battle Creek, Mich.
Goss Printing Press Co., 16th St. and Ashland Ave., Chicago.
Kidder Press Co., Dover, N. H.
National Mfg. Co., Elkhart, Ind.
Ostrander-Seymour Co., Tribune Bldg., Chicago, Ill.
Potter Printing Press Co., Plainfield, N. J.
Scott, Walter, & Co., Plainfield, N. J.

115 **ROUTING MACHINES.** See 89, Electrotyping and Stereotyping Machinery.

116 **SHAVING MACHINES.** See 89, Electrotyping and Stereotyping Machinery.

117 **TRIMMING AND SAWING MACHINES.** See 89, Electrotyping and Stereotyping Machinery.

118 **TYPE SETTING MACHINES.**

119 **Individual Type.**
Brown, R. H., & Co., New Haven, Conn.
Unitype Co., 148 Sands St., Brooklyn, N. Y.

120 **Slug Casting.**
Mergenthaler Linotype Co., Tribune Bldg., New York.

121 **Type Casting and Setting.**
Lanston Monotype Machine Co., 137 W. 23d St., New York.

122 **WALLPAPER MACHINERY.** For embossing, trimming and printing wallpaper.
Kaukauna Machine Works, Kaukauna, Wis.
King, A. R., Mfg. Co., 532 W. 22d St., New York.
Seybold Machine Co., Dayton, O.
Sheridan, T. W., & C. B., 56 Duane St., New York.
Wood, O. V., Fostoria, O.

SECTION V

TEXTILE MACHINERY AND APPLIANCES.

INDEX TO DEPARTMENTS.

	Page
Cordage Machinery	490
Textile Mill Machinery	491
Textile Machinery Accessories	503

MANUFACTURERS OF

TEXTILE MACHINERY.

Alphabetical Index.

Abbott, J. V., Mfg. Co., Dedham, Mass.—Loom Pickers.
Adams, George H., & Co., Hill, N. H.—Knitting Needles.
Allen, A. W., 2427 Mascher St., Philadelphia, Pa.—Winders.
Allen, Wm., & Sons, Co., Worcester, Mass.—Bleaching Machinery.
Altemus, Jacob K., 2818 N. 4th St., Philadelphia, Pa.—Carpet Machinery, Winders, etc.
Alvord, Clinton, Worcester, Mass.—Carpet Looms.
American Card Clothing Co., Worcester, Mass.—Card Clothing.
American Drying Machinery Co., Somerset & Mascher Sts., Philadelphia, Pa.—Drying Machinery, etc.
American Dyeing Machine Co., Camden, N. J.—Dyeing Machinery.
American Knitting Machine Co., Woonsocket, R. I.—Circular Knitting Machines.
American Napping Machine Co., Williamstown, Mass.—Finishing Mchy.
American Overstitch Machine Co., 18-30 W. Randolph St., Chicago, Ill. Sewing and Finishing Machines.
American Raveller Co., Philmont, N. Y.—Cutters, Sewing and Finishing Machines.
American Ring Traveler Co., Providence, R. I.—Ring Travelers.
American Supply Co., Providence, R. I.—Ring Travelers, etc.
American Tool & Machine Co., 109 Beach St., Boston, Mass.—Hydro Extractors.
American Vulcanized Fibre Co., Wilmington, Del.—Roving Cans.
Amsterdam Card Clothing Co., Amsterdam, N. Y.—Card Clothing.
Antisdel, E. M., 12 Miller St., Utica, N. Y.—Drying Machinery.
Arguto Oilless Bearing Co., Wayne Junction, Philadelphia, Pa.—Spinning Cylinders.
Arlington Machine Works, Arlington Heights, Mass.—Bleaching, Dyeing Machinery, etc.
Arnold Sewing Machine Co., 216 High St., Newark, N. J.—Sewing and Finishing Machines.
Asala Co., 1 Greene St., New York.—Looms.
Ashworth, Elijah, Fall River, Mass.—Card Clothing.
Atherton, A. T., Machine Co., Pawtucket, R. I.—Feeders, Winders, etc.
Atlas Copper Stamp Works, 15 Whitehall St., New York.—Hosiery Stamps.
Atwood-Morrison Co., Stonington, Conn.—Silk Machinery.
Automatic Twisting-In Machine Co., 309 Broadway, New York.—Twisters.
Babcock Machine Works, Fort Plain, N. Y.—Knitting Machine Attachments.
Bailey, Frank, Cedar Brook, N. J.—Drying Machinery, etc.
Bamford & Smith, Pascoag, R. I.—Spindles and Spinning Tubes.
Barber & Coleman, 11 Pemberton Square, Boston, Mass.—Knotters.
Barlow, John W., Lawrence, Mass.—Loom Pickers.
Bassett, Elmer C., Norfolk Downs, Mass.—Yarn Testing Machines.

Battles, Joseph, Co., Lawrence, Mass.—Jacquard Machines.
Beatties Machine Works, Cohoes, N. Y.—Loopers.
Berry, A. Hun., 23 W. 1st St., Boston, Mass.—Drying Machinery.
Birch Bros., Co., Somerville, Mass.—Bleaching, Drying Machinery, etc.
Boomer & Boschert Press Co., Syracuse, N. Y.—Presses.
Booth, Benjamin, & Co., Philadelphia, Pa.—Card Clothing.
Borchers, Richard C., & Co., Frankford, Philadelphia, Pa.—Finishing Machinery.
Boss Knitting Machine Works, Elm & Reed Sts., Reading, Pa.—Circular Knitting Machines.
Boston Electric Spinning Co., 11 Pemberton Square, Boston, Mass.—Mules.
Bragg, John I., Olneyville, R. I.—Combs, Circles and Fallers.
Branson Machine Co., 506 N. American St., Philadelphia, Pa.—Circular Knitting Machines, etc.
Breedon's, William, Son, Amsterdam, N. Y.—Knitting Machine Burrs.
Brigham, Arthur A., 186 Devonshire St., Boston, Mass.—Carpet and Silk Machinery.
Brinton, H., & Co., 213-215 Race St., Philadelphia, Pa.—Circular Knitting Machines.
Brockway & Meckenstrum Machine Co., Moodus, Conn.—Carpet Mchy.
Brown, W. H., Mechanic St., Worcester, Mass.—Card Grinders.
Brownell, G. L., Worcester, Mass.—Cordage Machinery.
Buckley's, Benjamin, Son, Paterson, N. J.—Spindles, Spinning Tubes.
Bucyrus Knitting Machine Co., Bucyrus, O.—Circular Knitting Machines.
Bullock, O. S., Machine Co., Cambridgeport, Mass.—Cordage Mchy.
Burke & Hanford, 621 Broadway, New York.—Testing Machines.
Butterworth, H. W., & Sons, Co., York & Cedar Sts., Philadelphia, Pa.—Bleaching, Drying Machinery, etc.
Cameron, James A., 4th Ave. & Baltic St., Brooklyn, N. Y.—Slitting and Reeling Machines.
Campbell & Clute, Cohoes, N. Y.—Loopers, Knitting Machines, etc.
Case Bros., Highland Park, Conn.—Jacquard Cards.
Cavagnaro, John J., 215 Centre St., New York.—Finishing Machinery.
Champion Buttonhole Machine Co., 368 Congress St., Boston, Mass.—Sewing and Finishing Machines.
Champion Machine Co., American & Diamond Sts., Philadelphia, Pa.—Knitting Machines, etc.
Chase, F. A., & Co., Providence, R. I.—Heddles, Ring Travelers.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.—Drying Machinery, Twisters, etc.
Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.—Fluted Rolls.
Collins Bros., Central Falls, R. I.—Twisters and Winders.
Cook, Stephen S., 624 Race St., Philadelphia, Pa.—Knitting Machines.
Cooper, Charles, Bennington, Vt.—Knitting Machines, etc.
Corey, William, Co., Manchester, N. H.—Knitting Needles.
Crabb, William, & Co., Newark, N. J.—Loom Reeds and Harness, etc.
Crane Mfg. Co., Lakeport, N. H.—Knitting Machines, etc.
Crompton & Knowles, Loom Works, Worcester, Mass.—Carpet Machinery, Looms, etc.
Crompton-Thayer Loom Co., Worcester, Mass.—Woolen Looms.
Curtis & Marble Machine Co., Worcester, Mass.—Carpet Machinery, etc.
Cutler, Aaron T., Worcester, Mass.—Card Clothing.
Dailey, C. E., 116 Broad St., New York.—Cordage Machinery.
Davis & Furber Machine Co., North Andover, Mass.—Finishing Machinery, Mules, etc.
De Haven Mfg. Co., Columbia Heights, Brooklyn, N. Y.—Ring Travelers.

Delahunty Dyeing Machine Co., Pittston, Pa.—Dyeing Machinery.
Diamond Textile Machine Works, Diamond & 2d Sts., Philadelphia, Pa.—Mules, Twisters, etc.
Dienelt & Eisenhardt, 1304 N. Howard St., Philadelphia, Pa.—Oil Cloth Printing Machines.
Dodge, C. S., Lowell Mass.—Wool Preparing Machinery.
Dodge Needle Co., Manchester, N. H.—Knitting Needles.
Douglas Mfg. Co., Fall River, Mass.—Cop Tubes.
Draper Co., Hopedale, Mass.—Cotton Machinery, Looms, etc.
Dubois, A. N., 2170 Sedgley Ave., Philadelphia, Pa.—Dyeing Mchy.
Eastman Machine Co., Buffalo, N. Y.—Cloth Cutting Machines.
Easton & Burnham Machine Co., Pawtucket, R. I.—Winders, Spindles.
Eastwood, Benjamin, Co., Paterson, N. J.—Cloth Folding, Measuring and Marking Machines; Silk Machinery.
Edma Card Clothing Co., Camden, N. J.—Card Clothing.
Elliott & Hall, 54 Hermon St., Worcester, Mass.—Cloth Folding, Measuring and Marking Machines.
Emmons Loom Harness Co., Lawrence, Mass.—Loom Reeds, Harness.
Entwistle, T. C., Co., Lowell, Mass.—Winders, Card Grinders, etc.
Excelsior Needle Co., Torrington, Conn.—Knitting Needles.
Excelsior Knitting Machine Co., Allentown, Pa.—Knitting Machines.
Fabric Measuring & Packaging Co., 82 Centre St., New York.—Measuring, Marking, Stamping Machines.
Fairmount Machine Co., 22d & Wood Sts., Philadelphia, Pa.—Quillers, Cotton Looms, etc.
Fales & Jenks Machine Co., Pawtucket, R. I.—Cotton Machinery.
Fisher Knitting Machine Co., Utica, N. Y.—Knitting Machines.
Forschner, Charles, & Sons, 206 E. 19th St., New York.—Twine Testing Machines.
Foster Machine Co., Westfield, Mass.—Winders.
Franklin Machine Co., Providence, R. I.—Winders.
Franklin Needle Co., Franklin, N. H.—Knitting Needles.
Freeman Bros., Brattleboro, Vt.—Knitting Needles.
Garland Mfg. Co., Saco, Me.—Loom Pickers.
Gearheart, J. E., & Son, Clearfield, Pa.—Knitting Machines.
Gerry, George, & Son, Athol, Mass.—Wool Preparing Machinery.
Gessner, David, Worcester, Mass.—Finishing Machinery, etc.
Getchell, S. S., & Son, Woonsocket, R. I.—Roving Cans.
Gormly, Robert, & Co., Troy, N. Y.—Knitting Machine Burrs.
Graffield Sponger Co., Jackson, Mich,—Cloth Spongers.
Hall, I. A., & Co., Paterson, N. J.—Bobbins, Shuttles, Heddles, etc.
Halton's, Thomas, Sons, Allegheny Ave. & C St., Philadelphia, Pa.—Jacquard Machines, etc.
Hart, Charles, Frankford, Philadelphia, Pa.—Finishing Machinery, etc.
Hartson, L. M., Co., North Windham, Conn.—Silk Machinery.
Harwood, Geo. S., & Son, 53 State St., Boston, Mass.—Feeders.
Haskell-Dawes Machine Co., 176 Federal St., Boston, Mass.—Cordage Machinery.
Haworth & Watson, Lowell, Mass.—Cop Tubes.
Heathcote, John, & Son, Providence, R. I.—Drying Machinery.
Hepworth, John W., & Co., Lehigh Ave. & Mascher St., Philadelphia, Pa.—Knitting Machines, etc.
Hill, James, Mfg. Co., Providence, R. I.—Roving Cans, Spinning Cylinders.
Hoag, A. W., & Co., Reading, Pa.—Dyeing Machinery.
Hood, R. H., 1213 Day St., Philadelphia, Pa.—Wool Preparing Machinery.
Hoover & Gamble Co., Miamisburg, O.—Cordage Machinery.

Hope, John, & Sons, Engraving & Mfg. Co., Providence, R. I.—Print Works Machinery, etc.
Hopkins Machine Works, Bridgeton, R. I.—Finishing Machinery, etc.
Howard, George C., 2123 Market St., Philadelphia, Pa.—Carpet Machinery, Presses, etc.
Howard Bros. Mfg. Co., Worcester, Mass.—Card Clothing, Heddles.
Howard & Bullough, Ltd., Pawtucket, R. I.—Carding Machines, Winders, etc.
Hunt, Rodney, Machine Co., Orange, Mass.—Bleaching, Drying, Dyeing Machinery, etc.
Hunter, James, Machine Co., North Adams, Mass.—Drying Machinery.
Huse, W. D., & Sons, Laconia, N. H.—Knitting Machines, etc.
Industrial Mfg. Co., Camden, N. J.—Sewing and Finishing Machines.
Ives, Loyal T., New Brunswick, N. J.—Knitting Needles.
Jackson, Edward, 214 W. Dauphin St., Philadelphia, Pa.—Bobbins, Spools, etc.
Jackson, James, & Sons, Paterson, N. J.—Jacquard Looms.
Jacobs, E. H., Mfg. Co., Danielson, Conn.—Loom Pickers.
Jenckes, E., Mfg. Co., Pawtucket, R. I.—Knitting Machines, etc.
Jennings, A. G., Machine Mfg. Co., 299 Park Ave., Brooklyn, N. Y.—Cordage Machinery.
Johnson & Bassett, Worcester, Mass.—Mules, Bobbin Winders, etc.
Jones, Lewis, Media & 60½ Sts., Philadelphia, Pa.—Finishing Machinery.
Kennedy, Thomas & Son, Cohoes, N. Y.—Cloth Cutting Machines, etc.
Kenyon, D. R., & Son, Rariton, N. J.—Drying Machinery, etc.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Philadelphia, Pa.—Knitting Machines.
Kilburn, Lincoln & Co., Fall River, Mass.—Looms.
Kitson Machine Co., Lowell, Mass.—Feeders, Lap Machines, etc.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.—Dyeing and Finishing Machinery.
Klein, Charles C., Marshall & Cambria Sts., Philadelphia, Pa.—Twisters, Spoolers, etc.
Knapp, Charles H., Paterson, N. J.—Finishing Machinery, etc.
Kutz Knitting Machine Co., 111 Lemon St., Reading, Pa.—Knitting Machines.
Lamb Knitting Machine Co., Chicopee Falls, Mass.—Knitting Machines.
Leighton Machine Co., Manchester, N. H.—Knitting Machines, etc.
Lever, Oswald, Lehigh Ave. & Mascher St., Philadelphia, Pa.—Beaming Machines, Quillers.
Lewiston Machine Co., Lewiston, Me.—Carpet Machinery.
Lindley, George W., 5120 Wakefield St., Philadelphia, Pa.—Knitting Machines, etc.
Lindsay & Hyde, East York St., Philadelphia, Pa.—Cop and Skein Winders.
Livermore, Homer F., 85 Pearl St., Boston, Mass.—Shuttle Checks.
Lockwood Mfg. Co., East Boston, Mass.—Cordage Machinery.
Lombard, N. A., Co., Worcester, Mass.—Carding Machines, Card Clothing.
Lorimer Machinery Co., Ontario & Lawrence Sts., Philadelphia, Pa.—Drying, Dyeing Machinery, etc.
Lowell Machine Shop, Lowell, Mass.—Cotton Machinery.
Loyd, John, Co., 558 Water St., New York.—Twine Balling Machines.
Lufkin, John W., 38 Chardon St., Boston, Mass.—Sewing and Finishing Machines.
Luther, C. A., & Co., Pawtucket, R. I.—Reels.
Lyall, J. & W., Passaic, N. J.—Carpet Looms.
Lydall, H., & Foulds, Manchester, Conn.—Knitting Needles.

McCreary, Edward, Cohoes, N. Y.—Finishing Machinery, Cutters, etc.
McGuire, John A., Co., Claremont, N. H.—Bobbins, Spools, Shuttles.
McMichael & Wildman Mfg. Co., Norristown, Pa.—Knitting Machines, Cutters, etc.
Mason Machine Works, Taunton, Mass.—Carding Machines, Combers, Mules, etc.
Mayo, George D., Machine Co., Laconia, N. H.—Knitting Machines.
Mayo Knitting Machine & Needle Co., Franklin Falls, N. H.—Knitting Machines, etc. *See page 124.*
Mears, John W., Manchester, N. H.—Loom, Reeds and Harness.
Merrow Machine Co., Hartford, Conn.—Sewing and Finishing Machines.
Miller, William, Providence, R. I.—Combs, Circles and Fallers.
Miller Press & Machine Co., Woonsocket, R. I.—Finishing Machinery.
Monarch Ring Traveler Co., Providence, R. I.—Ring Travelers.
Mont Clare Needle Co., Mont Clare, Pa.—Knitting Needles.
Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.—Oil Cloth and Linoleum Printing Machines.
Morley Button Mfg. Co., Essex St., Boston, Mass.—Ring Travelers.
Murray, Charles, O., Nashua, N. H.—Bobbins, Spools, Shuttles.
National Automatic Knitter Co., 724 Cherry St., Philadelphia, Pa.—Knitting Machines.
National Ring Traveler Co., Providence, R. I.—Ring Travelers.
New England Butt Co., Providence, R. I.—Braiding Machinery.
New England Shuttle Co., Lawrence, Mass.—Bobbins, Spools, Shuttles.
North Chelmsford Machine Co., North Chelmsford, Mass.—Winders, Combs, Circles, etc.
Nye & Tredick Co., 606 Arch St., Philadelphia, Pa.—Knitting Machine
Page Needle Co., Chicopee Falls, Mass.—Knitting Needles.
Pairpoint Corporation, New Bedford, Mass.—Cop Tubes, Roving Cans.
Parks & Woolson Machine Co., Springfield, Vt.—Finishing Machinery.
Pawtucket Spinning Ring Co., Pawtucket, R. I.—Spinning Rings.
Paxton & O'Neil, 127 Bread St., Philadelphia, Pa.—Knitting Machines.
Payne, George W., Co., Pawtucket, R. I.—Winders.
Pepper Machine Works, Lakeport, N. H.—Knitting Machines, etc.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.—Drying Machinery, etc.
Philadelphia Textile Machinery Co., Hancock & Somerset Sts., Philadelphia, Pa.—Drying Machinery, etc.
Phillip, Thomas, & Co., Providence, R. I.—Presses.
Phoenix Iron Works Corporation, Hartford, Conn.—Bleaching, Drying Machinery, etc.
Pioneer Iron Works, 149 William St., Brooklyn, N. Y.—Fibre Machines.
Place, M., & Co., Worcester, Mass.—Loom Reeds and Harness.
Porter Shuttle & Bobbin Co., Watertown, Mass.—Bobbins, Spools, Shuttles, etc.
Pownall Iron Works Co., Jamesburg, N. J.—Drying, Dyeing Machinery.
Providence Machine Co., Providence, R. I.—Combers, Draw Frames, etc.
Quaker City Stencil & Stamp Works, 234 Arch St., Philadelphia, Pa.—Hosiery Stamps.
Reece Buttonhole Machine Co., Boston, Mass.—Sewing and Finishing Machines.
Reliance Ring Traveler Co., Providence, R. I.—Ring Travelers.
Rhode Island Braiding Machine Co., Providence, R. I.—Braiding Machinery.
Rice, Barton & Fales, Iron & Machine Co., Worcester, Mass.—Print Works Machinery, etc.
Rogers, H. E., South Manchester, Conn.—Jacquard Cards.
Ross, E., & Co., Toledo, O.—Rug Looms.
Rothe, O. & P., Norristown, Pa.—Carpet and Dyeing Machinery.

Roy, B. S., & Son, Worcester, Mass.—Card Grinders.
Ruth Automatic Knitting Machine Co., York, Pa.—Knitting Machines.
Saco & Pettee, Machine Shops, Newton Upper Falls, Mass.—Carding Machines, Cotton Looms, etc.
Salem Iron Works, Winston-Salem, N. C.—Drying and Dyeing Machinery.
Saranac Electric Mfg. Co., St. Joseph, Mich.—Hosiery Labeling Machines.
Sargent's, C. G., Sons, Graniteville, Mass.—Drying, Dyeing Machinery.
Sayford Paper Specialty Co., Camden, N. J.—Cop Tubes.
Schaum & Uhlinger, Glenwood Ave. & 2d St., Philadelphia, Pa.—Hydro Extractors, Looms, etc.
Scott & Williams, 2079 E. Cumberland St., Philadelphia, Pa.—Knitting Machines, etc.
Shaw, J. B., Philadelphia, Pa.—Knitting Needles.
Shaw, Victor, Ring Traveler Co., Providence, R. I.—Ring Travelers.
Shaw & Cocker, Machine Co., Paterson, N. J.—Spinning Frames.
Singer Mfg. Co., 569 Broadway, New York.—Sewing and Finishing Machines.
Smith, James, & Co., 411 Race St., Philadelphia, Pa.—Loom Pickers.
Smith, James, Woolen Machinery Co., 411 Race St., Philadelphia, Pa.—Carding Machines, Feeders, Mules, etc.
Smith, Drum & Co., 2503 Coral St., Philadelphia, Pa.—Bleaching, Drying, Dyeing Machinery, etc.
Snyder, Homer P., Mfg. Co., Little Falls, N. Y.—Knitting Machines.
Southern Bobbin Co., Greensboro, N. C.—Bobbins, Spools, Shuttles.
Southern Shuttle & Bobbin Co., Westminster, S. C.—Bobbins, Spools, Shuttles. etc.
Spaulding-Perkins Co. North Rochester, N. H.—Roving Cans.
Spence & Rideout, Nashua, N. H.—Presses.
Spotless Steam Sponger Co., Cleveland, O.—Cloth Steamers.
Stafford, George W., Mfg. Co., Readeville, Mass.—Silk Machinery, Looms, etc.
Stafford & Holt, Little Falls, N. Y.—Finishing Machinery, Knitting Machines, etc.
Standard Machine Co., 508 Ludlow St., Philadelphia, Pa.—Cutters, Loopers, Knitting Machines.
Standard Sewing Mche. Co., Cleveland, O.—Sewing and Finishing Machines.
Steadwell Dyeing Machine Co., Amsterdam, N. Y.—Dyeing Machinery.
Steel Heddle Mfg. Co., Germantown Ave., Philadelphia, Pa.—Heddles.
Taunton-New Bedford Copper Co., New Bedford, Mass.—Print Works Machinery, etc.
Tebbetts, E. L., & Co., Lockes Mills, Me.—Bobbins, Spools, Shuttles, etc.
Textile Finishing Mch'y Co., 17 Exchange Place, Providence, R. I.—Bleaching, Drying, Dyeing Machinery, etc.
Textile Machine Works, Reading, Pa.—Braiding Machinery, Knitting Machines.
Thwiston, A. G., & Son, Fall River, Mass.—Fluted Rolls.
Tiffany Bros., Bennington, Vt.—Knitting Machines.
Todd, Joseph C., 203 Broadway, New York.—Cordage Machinery.
Tolhurst, W. H., & Son, Troy, N. Y.—Hydro Extractors.
Tompkins Bros., Troy, N. Y.—Knitting Machines, etc.
Torrance Mfg. Co., Harrison, N. J.—Winders.
Townsend, Thomas, 157 Orange St., Providence, R. I.—Combs, Circles, Fallers, etc.
Treat, Orion, Manchester Green, Conn.—Knitting Needles.
Tucker Stop Motion Co., Winsted, Conn.—Loom Stop Motions.

Union Button Sewing Machine Co., 164 High St., Boston, Mass.—Sewing and Finishing Machines.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.—Sewing and Finishing Machines.
United States Bobbin & Shuttle Co., Providence, R. I.—Bobbins, Spools, Shuttles, etc.
Universal Cutter Co., 4567 Scott Ave., St. Louis, Mo.—Cloth Cutting Machines.
Universal Winding Co., 95 South St., Boston, Mass.—Winders, etc.
Vermont Spool & Bobbin Co., Essex Junction, Vt.—Bobbins, Spools, Shuttles, etc.
Victor Shuttle Check Co., Auburn, N. Y.—Shuttle Checks.
Walder, Jacob, Paterson, N. J.—Bobbins, Spools, Shuttles, etc.
Ward & Vandegrift, Elmer, N. J.—Spindles.
Wardwell Needle Co., Lakeport, N. H.—Knitting Needles.
Warth, A. (Estate of), Stapleton, Staten Island, N. Y.—Cloth Cutting Machines.
Watson, L. S., Mfg. Co., Leicester, Mass.—Heddles.
Watson Machine Co., Paterson, N. J.—Cordage Machinery.
Webendorfer Machine Co., Paterson, N. J.—Dyeing, Finishing Machinery, etc.
Wells, Wilfred, 505 W. Lehigh Ave., Philadelphia, Pa.—Hosiery Stamps.
Welthall, John D., Philadelphia, Pa.—Knitting Needles.
Westcott, A. A., & Sons, Hopedale, Mass.—Spindles.
Wheeler & Wilson Mfg. Co., Bridgeport, Conn.—Sewing and Finishing Machines.
Whitin Machine Works, Whitinsville, Mass.—Cotton Looms, Winders.
Whitinsville Spinning Ring Co., Whitinsville, Mass.—Spinning Rings.
Whittle, James H., Worcester, Mass.—Roving Cans, Spinning Cylinders.
Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York.—Sewing and Finishing Machines.
Willimantic Machine Co., Willimantic, Conn.—Twisters, Spoolers, etc.
Windle, J. E., Worcester, Mass.—Cloth Folding Machines.
Winter, L. F., 418 W. 27th St., New York.—Twine Testing Machines.
Wolf Electric Promoting Co., 710 Main St., Cincinnati, O.—Cloth Cutting Machines.
Woodstock Hardwood & Spool Mfg. Co., Charlestown, S. C.—Bobbins, Spools, Shuttles, etc.
Woonsocket Machine & Press Co., Woonsocket, R. I.—Finishing Machinery, Presses, etc.
Woonsocket Napping Mchy Co., Woonsocket, R. I.—Finishing Machinery.
Woonsocket Reed & Shuttle Works, Woonsocket, R. I.—Bobbins, Spools, Shuttles, etc.
Worcester Warp Compressing Machine Co., Worcester, Mass.—Spoolers.
Wright, G. L., Tuscumbia, Mo.—Carding Machines.

TEXTILE MACHINERY.

1 **BRAIDING MACHINERY.** For making braid, sash cord, shoe laces, etc.; also for covering electric wires and cables.

New England Butt Co., Providence, R. I.
Rhode Island Braiding Machine Co., Providence, R. I.
Textile Machine Works, Reading, Pa.

2 CORDAGE MACHINERY.

3 **BALLING MACHINES, TWINE.** For winding twine into balls.

Hoover & Gamble Co., Miamisburg, Ohio.
Loyd, John Co., 558 Water St., New York.
Watson Machine Co., Paterson, N. J.

4 **BINDER TWINE MACHINERY.**

Dailey, C. E., 116 Broad St., New York.
Hoover & Gamble Co., Miamisburg, Ohio.
Lockwood Mfg. Co., East Boston, Mass.
Todd, Joseph C., 203 Broadway, New York.
Universal Winding Co., 95 South St., Boston, Mass.
Watson Machine Co., Paterson, N. J.

4A **FIBRE MACHINES.**

Pioneer Iron Works, 149 William St., Brooklyn, N. Y.
Todd, Joseph C., 203 Broadway, New York.

5 **FORMING AND LAYING MACHINES.** For twisting yarn into strands, also for laying rope.

Brownell, G. L., Worcester, Mass.
Dailey, C. E., 116 Broad St., New York.
Haskell-Dawes Machine Co., 176 Federal St., Boston, Mass.
Lockwood Mfg. Co., East Boston, Mass.
Watson Machine Co., Paterson, N. J.

5A **JUTE MACHINERY.**

Haskell-Dawes Machine Co., 176 Federal St., Boston, Mass.
Todd, Joseph C., 203 Broadway, New York.

6 **PAPER TWINE TWISTERS AND LAYERS.**

Brownell, G. L., Worcester, Mass.
Bullock, O. S., Machine Co., Cambridgeport, Mass.
Dailey, C. E., 116 Broad St., New York.
Haskell-Dawes Machine Co., 176 Federal St., Boston, Mass.

PAPER TWINE TWISTERS AND LAYERS, continued

Hoover & Gamble Co., Miamisburg, Ohio.
Lockwood Mfg. Co., East Boston, Mass.
Watson Machine Co., Paterson, N. J.

7 **PREPARING AND SPINNING MACHINES.** For drawing hard fiber into a sliver and spinning it; including breakers, scutchers, spreaders, draw frames, finishers and jennies.

Brownell, G. L., Worcester, Mass.
Dailey, C. E., 116 Broad St., New York.
Haskell-Dawes Machine Co., 176 Federal St., Boston, Mass.
Hoover & Gamble Co., Miamisburg, Ohio.
Jennings, A. G., Machine Mfg. Co., 299 Park Ave., Brooklyn, N. Y.
Lockwood Mfg. Co., East Boston, Mass.
Watson Machine Co., Paterson, N. J.

8 **TESTING MACHINES, TWINE.** For testing the strength of twine or yarn.

Bassett, Elmer C., Norfolk Downs, Mass.
Forschner, Charles, & Sons, 206 E. 19th St., New York.
Watson Machine Co., Paterson, N. J.
Winter, L. F., 418 W. 27th St., New York.

9 **TOW AND WASTE MACHINERY.**

Dailey, C. E., 116 Broad St., New York.
Hoover & Gamble Co., Miamisburg, Ohio.
Watson Machine Co., Paterson, N. J.

---

10 TEXTILE MILL MACHINERY AND APPLIANCES.

11 **BLEACHING MACHINERY.** Including keirs, squeezers, agitators, caustic soda plants, starch mangles, calenders, tentering machines, etc.

Allen, William, & Sons Co., Worcester, Mass.
Arlington Machine Works, Arlington Heights, Mass.
Birch Bros. Co., Somerville, Mass.
Butterworth, H. W., & Sons Co., York and Cedar Sts., Philadelphia, Pa.
Hunt Rodney Machine Co., Orange, Mass.
Phoenix Iron Works Corporation, Hartford, Conn.
Rothe, O. & P., Norristown, Pa.
Smith, Drum & Co., 2503 Coral St., Philadelphia, Pa.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R. I.
Yaryan Co., 41 Park Row, New York.

12 **CARPET MACHINERY.** Setting frames, etc., for making tapestry and velvet carpets. See also 64, Carpet Looms.

Altemus, Jacob K., 2818 No. 4th St., Philadelphia, Pa.

CARPET MACHINERY, continued

Crompton & Knowles Loom Works, Worcester, Mass.
Curtis & Marble Machine Co., Worcester, Mass.
Halton's, Thomas, Sons, Allegheny Av. & C St., Philda, Pa.
Howard, George C., 2123 Market St., Philadelphia, Pa.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Textile Mchy Co., Hancock & Somerset Sts., Philadelphia, Pa.

13 **COTTON MACHINERY.** For specific headings see under Picking and Preparing Machinery—Nos. 34 to 45 inclusive.

Altemus, Jacob K., 2818 N. 4th St., Philadelphia, Pa.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Brigham, Arthur A., 186 Devonshire St., Boston, Mass.
Brockway & Meckenstrum Machine Co., Moodus, Conn.
Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.
Crompton & Knowles Loom Works, Worcester, Mass.
Curtis & Marble Machine Co., Worcester, Mass.
Diamond Textile Machine Works, 2d & Diamond Sts., Philda.
Draper Co., Hopedale, Mass.
Easton & Burnham Machine Co., Pawtucket, R. I.
Entwistle, T. C., Co., Lowell, Mass.
Fairmount Machine Co., 22d & Wood Sts., Philadelphia, Pa.
Fales & Jenks Machine Co., Pawtucket, R. I.
Franklin Machine Co., Providence, R. I.
Howard & Bullough, Ltd., Pawtucket, R. I.
Kilburn Lincoln & Co., Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Lewiston Machine Co., Lewiston, Me.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Payne, George W., Co., Pawtucket, R. I.
Providence Machine Co., Providencee, R. I.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Smith, James, Woolen Mchy Co., 411 Race St., Philda, Pa.
Whitin Machine Works, Whitinsville, Mass.
Woonsocket Machine & Press Co., Woonsocket, R. I.

14 **CUTTING MACHINES, CLOTH.**

Eastman Machine Co., Buffalo, N. Y.
Kennedy, Thomas, & Son, Cohoes, N. Y.
Universal Cutter Co., 4567 Scott Av., St. Louis, Mo.
Warth, A. (Estate of), Stapleton, Staten Island, N. Y.
Wolf Electric Promoting Co., 710 Main St., Cincinnati, Ohio.

15 **DRYING MACHINERY.**

American Drying Mchy. Co., Somerset & Mascher Sts., Philda.
Antisdel, E. M., 12 Miller St., Utica, N. Y.
Bailey, Frank, Cedar Brook, N. J.
Berry, A. Hun, 23 West First St., Boston, Mass.
Birch Bros. Co., Somerville, Mass.
Butterworth, H. W., & Sons Co., York and Cedar Sts., Philadelphia, Pa.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Heathcote, John, & Son, Providence, R. I.
Hunter, James, Machine Co., North Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.

DRYING MACHINERY, continued

Lorimer Machinery Co., Ontario & Lawrence Sts., Philda.
Philadelphia Drying Mchy. Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Mchy. Co., Hancock & Somerset Sts., Philadelphia, Pa.
Phoenix Iron Works Corporation, Hartford, Conn.
Pownall Iron Works, Jamesburg, N. J.
Salem Iron Works, Winston-Salem, N. C.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, James, Woolen Mchy. Co., 411 Race St., Philda, Pa.
Smith, Drum & Co., 2503 Coral St., Philadelphia, Pa.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R. I.

16 **Hydro-Extractors.** For removing moisture from yarns.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Curtis & Marble Machine Co., Worcester, Mass.
Hunt, Rodney Machine Co., Orange, Mass.
Schaum & Uhlinger, Glenwood Ave. and 2d St., Philadelphia, Pa.
Tolhurst, W. H., & Son, Troy, N. Y.

17 **DYEING MACHINERY.**

American Dyeing Machine Co., Camden, N. J.
Arlington Machine Works, Arlington Heights, Mass.
Birch Bros. Co., Somerville, Mass.
Butterworth, H. W., & Sons Co., York and Cedar Sts., Philadelphia, Pa.
Delahunty Dyeing Mche. Co., Pittston, Pa.
Dubois, A. N., 2170 Sedgley Av., Philadelphia, Pa.
Hoag, A. W., & Co., Reading, Pa.
Hunt, Rodney, Machine Co., Orange Mass.
Klauder-Welden Dyeing Mchy Co., Amsterdam, N. Y.
Lorimer Mchy. Co., Ontario and Lawrence Sts., Philadelphia, Pa.
Phoenix Iron Works Corporation, Hartford, Conn.
Pownall Iron Works, Jamesburg, N. J.
Rothe, O. & P., Norristown, Pa.
Salem Iron Works, Winston-Salem, N. C.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Drum & Co., 2503 Coral St., Philadelphia, Pa.
Steadwell Dyeing Machine Co., Amsterdam, N. Y.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R. I.
Webendorfer Machine Co., Paterson, N. J.

18 **FINISHING MACHINERY.** For putting the finish on cotton, worsted, woolen and felt goods, velvets, carpets, etc.

American Napping Mchy. Co., Williamstown, Mass.
Arlington Machine Works, Arlington Heights, Mass.
Birch Bros. Co., Somerville, Mass.
Borchers, Richard C., & Co., Frankford, Philadelphia, Pa.
Butterworth, H. W., & Sons Co., York and Cedar Sts., Philadelphia, Pa.
Cavagnaro John J., 215 Centre St., New York.
Curtis & Marble Machine Works, Worcester, Mass.
Davis & Furber Machine Co., North Andover, Mass.

FINISHING MACHINERY, continued

Gessner, David, Worcester, Mass.
Hart, Charles, Frankford, Philadelphia, Pa.
Hopkins Machine Works, Bridgeton, R. I.
Hunter, James, Machine Co., North Adams, Mass.
Jones, Lewis, Media and 60½ Sts., Philadelphia, Pa.
Kenyon, D. R., & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Knapp, Charles H., Paterson, N. J.
Lowell Machine Shop, Lowell, Mass.
McCreary, Edward, Cohoes, N. Y.
Miller Press & Machine Co., Woonsocket, R. I.
Parks & Woolson Machine Co., Springfield, Vt.
Phoenix Iron Works Corporation, Hartford, Conn.
Pownall Iron Works, Jamesburg, N. J.
Smith, Drum & Co., 2503 Coral St., Philadelphia, Pa.
Stafford & Holt, Little Falls, N. Y.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R. I.
Webendorfer Machine Co., Paterson, N. J.
Woonsocket Machine & Press Co., Woonsocket, R. I.
Woonsocket Napping Mchy Co., Woonsocket, R. I.

19 **FOLDING MACHINES, CLOTH.**

Arlington Machine Works, Arlington Heights, Mass.
Birch Bros. Co., Somerville, Mass.
Butterworth, H. W., & Sons Co., York and Cedar Sts., Philadelphia, Pa.
Eastwood, Benjamin, Co., Paterson, N. J.
Elliot & Hall, 54 Hermon St., Worcester, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Lowell Machine Shop, Lowell, Mass.
Parks & Woolson Machine Co., Springfield, Vt.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R. I.
Windle, J. E., Worcester, Mass.

20 **KNITTING MACHINERY.**

21 **ATTACHMENTS, KNITTING MACHINE.** For obtaining special effects in design, etc.

American Knitting Machine Co., Woonsocket, R. I.
Babcock Machine Works, Fort Plain, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia, Pa.
Cooper, Charles, Bennington, Vt.
Lamb Knitting Machine Co., Chicopee Falls, Mass.
Pepper Machine Works, Lakeport, N. H.
Ruth Automatic Knitting Machine Co., York, Pa.
Scott & Williams, 2079 E. Cumberland St., Philadelphia, Pa.
Stafford & Holt, Little Falls, N. Y.

22 **AUXILIARY MACHINES.**

23 **Cutters, Flat and Circular Rib.** For cutting ribbed cuffs, borders, etc.

American Raveller Co., Philmont, N. Y.
Hepworth, John W., & Co., Lehigh Ave. and Mascher St., Philadelphia, Pa.
Kennedy, Thomas, & Son, Cohoes, N. Y.
McCreary, Edward, Cohoes, N. Y.

CUTTERS, FLAT AND CIRCULAR RIB, continued

McMichael & Wildman Mfg. Co., Norristown, Pa.
Standard Machine Co., 508 Ludlow St., Philadelphia, Pa.

24 **Cutting and Folding Machines.** For cutting and folding bands, facings, etc., used in finishing knit underwear.

Cooper, Charles, Bennington, Vt.
Kennedy, Thomas, & Son, Cohoes, N. Y.

25 **Eyelet Machines.** For punching eyelet holes in underwear, etc.

Kennedy, Thomas, & Son, Cohoes, N. Y.

26 **Sewing and Finishing Machines.** Adapted for overseaming, welting, crocheting, etc., of knit goods.
American Overstitch Machine Co., 18-30 West Randolph St., Chicago, Ill.
American Raveller Co., Philmont, N. Y.
Arnold Sewing Machine Co., 216 High St., Newark, N. J.
Champion Buttonhole Machine Co., 368 Congress St., Boston.
Hepworth, John W., & Co., Lehigh Ave. and Mascher St., Philadelphia, Pa.
Industrial Mfg. Co., Camden, N. J.
Lufkin, John W, 38 Chardon St., Boston, Mass.
Merrow Machine Co., Hartford, Conn.
Reece Buttonhole Machine Co., Boston, Mass.
Scott & Williams, 2079 E. Cumberland St., Philadelphia, Pa.
Singer Mfg. Co., 569 Broadway, New York.
Standard Sewing Machine Co., Cleveland, Ohio.
Union Button Sewing Machine Co., 164 High St., Boston, Mass.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Wheeler & Wilson Mfg. Co., Bridgeport, Conn.
Willcox & Gibbs Sewing Machine Co., 658 B'way, New York.

27 LOOPERS. For looping together the edges of knit goods where a seam would be objectionable.

Beattie's Machine Works, Cohoes, N. Y.
Campbell & Clute, Cohoes, N. Y.
Hepworth, John W., & Co., Lehigh Ave. and Mascher Sts., Philadelphia, Pa.
Leighton Machine Co., Manchester, N. H.
Scott & Williams, 2079 E. Cumberland St., Philadelphia, Pa.
Standard Machine Co., 508 Ludlow St., Philadelphia, Pa.

28 **Turners, Cloth.**

Beattie's Machine Works, Cohoes, N. Y.
McCreary, Edward, Cohoes, N. Y.
Snyder, Homer P., Mfg. Co., Little Falls, N. Y.

29 **KNITTING MACHINES, CIRCULAR.** In which the needles are set upright around a cylinder.

American Knitting Machine Co., Woonsocket, R. I.
Boss Knitting Machine Works, Elm & Reed Sts., Reading, Pa.
Branson Machine Co., 506 N. American St., Philadelphia, Pa.
Brinton, H., & Co., 213 Race St., Philadelphia, Pa.
Bucyrus Knitting Machine Co., Bucyrus, O.

KNITTING MACHINES, CIRCULAR, continued

Campbell & Clute, Cohoes, N. Y.
Cook, Stephen S., 624 Race St., Philadelphia, Pa.
Cooper, Charles, Bennington, Vt.
Crane Mfg. Co., Lakeport, N. H.
Excelsior Knitting Machine Mfg. Co., Allentown, Pa.
Fisher Knitting Machine Co., Utica, N. Y.
Gearhart, J. E., & Son, Clearfield, Pa.
Hepworth, John W., & Co., Lehigh Ave. and Mascher Sts., Philadelphia, Pa.
Huse, W. D., & Sons, Laconia, N. H.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Philda.
Kutz Knitting Machine Co., 111 Lemon St., Reading, Pa.
Lamb Knitting Machine Co., Chicopee Falls, Mass.
Leighton Machine Co., Manchester, N. H.
Lindley, George W., 5120 Wakefield St., Germantown, Pa.
McMichael & Wildman Mfg. Co., Norristown, Pa.
Mayo, George D., Machine Co., Laconia, N. H.
Mayo Knitting Machine & Needle Co., Franklin Falls, N. H. *See adv. page 124.*
National Automatic Knitter Co., 724 Cherry St., Philadelphia, Pa.
Nye & Tredick Co., 606 Arch St., Philadelphia, Pa.
Paxton & O'Neill, 129 Bread St., Philadelphia, Pa.
Pepper Machine Works, Lakeport, N. H.
Ruth Automatic Knitting Machine Co., York, Pa.
Scott & Williams, 2079 East Cumberland St., Philadelphia, Pa.
Snyder, Homer P., Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Standard Machine Co., 508 Ludlow St., Philadelphia, Pa.
Tompkins Bros., Troy, N. Y.

30 **Mantle.** For knitting the fabric used in the manufacture of incandescent gas light mantles.

Branson Machine Co., 506 N. American St., Philadelphia, Pa.
Lamb Knitting Machine Co., Chicopee Falls, Mass.
Scott & Williams, 2079 E. Cumberland St., Philadelphia, Pa.

31 **KNITTING MACHINES, STRAIGHT.** In which the needles are arranged on a horizontal bed.

Cook, Stephen S., 624 Race St., Philadelphia, Pa.
Cooper, Charles, Bennington, Vt.
Lamb Knitting Machine Co., Chicopee Falls, Mass.
Pepper Machine Works, Lakeport, N. H.
Stafford & Holt, Little Falls, N. Y.
Textile Machine Works, Reading, Pa.
Tiffany Bros., Bennington, Vt.

32 **MEASURING AND MARKING MACHINES.** For measuring fabrics, and marking the number of yards on the selvedge.

Butterworth, H. W., & Sons, Co., York & Cedar Sts., Philda.
Curtis & Marble Machine Co., Worcester, Mass.
Eastwood, Benjamin, Co., Paterson, N. J.
Fabric Measuring and Packaging Co., 82 Centre St., New York.
Elliott & Hall, 54 Hermon St., Worcester, Mass.
Gerry, George, & Son, Athol, Mass.

MEASURING AND MARKING MACHINES, continued

Parks & Woolson Machine Co., Springfield, Vt.
Windler, J. E., Worcester, Mass.

33 PICKING OR PREPARING MACHINERY.

34 CARDING MACHINES. For preparing the fibers before drawing or spinning.

Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Davis & Furber Machine Co., North Andover, Mass.
Howard & Bullough, Ltd., Pawtucket, R. I.
Lombard, N. A., Co., Worcester, Mass.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Philadelphia Textile Machinery Co., Hancock & Somerset Sts., Philadelphia, Pa.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.
Whitin Machine Works, Whitinsville, Mass.
Wright, G. L., Tuscumbia, Mo.

35 COMBERS. For combing the slivers.

Crompton & Knowles Loom Works, Worcester, Mass.
Mason Machine Works, Taunton, Mass.
Providence Machine Works, Providence, R. I.
Whitin Machine Works, Whitinsville, Mass.

36 DRAW FRAMES. For doubling a number of slivers, and drawing them into one even sliver with the fibers laid parallel.

Howard & Bullough, Ltd., Pawtucket, R. I.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Providence Machine Co., Providence, R. I.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Whitin Machine Works, Whitinsville, Mass.
Woonsocket Machine & Press Co., Woonsocket, R. I.

37 FEEDERS. For feeding stock to the opener or lapper.

Atherton, A. T., Machine Co., Pawtucket, R. I.
Harwood, George S., 53 State St., Boston, Mass.
Howard & Bullough, Ltd., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.
Woonsocket Machine & Press Co., Woonsocket, R. I.

38 LAP MACHINES. For making laps for use on combers or ribbon lap machines.

Atherton, A. T., Machine Co., Pawtucket, R. I.
Howard & Bullough, Ltd., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Philadelphia Textile Mchy Co., Hancock & Somerset Sts., Philadelphia, Pa.
Whitin Machine Works, Whitinsville, Mass.

LAP MACHINES, continued

39 **Finisher on Ribbon.** For preparing lap so that the web of the sliver will be of an even and uniform structure for the comber.

Atherton, A. T., Machine Co., Pawtucket, R. I.
Howard & Bullough, Ltd., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Whitin Machine Works, Whitinsville, Mass.

40 **MULES.** A spinning frame which draws, stretches and twists at one operation.

American Drying Machinery Co., Somerset & Mascher Sts., Philadelphia, Pa.
Boston Electric Spinning Co., Pemberton Sq., Boston, Mass.
Diamond Textile Machine Works, Diamond & 2d Sts., Philda.
Davis & Furber Machine Co., North Andover, Mass.
Johnson & Bassett, Worcester, Mass.
Mason Machine Works, Taunton, Mass.
Philadelphia Textile Machinery Co., Hancock & Somerset Sts., Philadelphia, Pa.
Smith, James, Woolen Machinery Co., 411 Race St., Philadelphia, Pa.

41 **OPENERS.**

American Drying Machinery Co., Somerset & Mascher Sts., Philadelphia, Pa.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Howard & Bullough, Ltd., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Philadelphia Textile Mchy Co., Hancock & Somerset Sts., Philadelphia, Pa.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

42 **RAILWAY HEADS.** For taking up a number of slivers from the cards and drawing them to a single sliver; also for evening variations in the sliver.

Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Whitin Machine Works, Whitinsville, Mass.
Woonsocket Machine & Press Co., Woonsocket, R. I.

43 **ROVING FRAMES.** In which the operation of drawing the sliver into threads is begun.

Howard & Bullough, Ltd., Pawtucket, R. I.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Providence Machine Works, Providence, R. I.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Whitin Machine Works, Whitinsville, Mass.
Woonsocket Machine & Press Co., Woonsocket, R. I.

44 **SPINNING FRAMES.** In which the thread is twisted into yarn.

American Drying Machinery Co., Somerset & Mascher Sts., Philadelphia, Pa.

SPINNING FRAMES, continued

Fales & Jenks Machine Co., Pawtucket, R. I.
Howard & Bullough, Ltd., Pawtucket, R. I.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Shaw & Cocker Machine Co., Paterson, N. J.
Webendorfer Machine Co., Paterson, N. J.
Whitin Machine Works, Whitinsville, Mass.

45 TWISTERS. For twisting yarn.

American Drying Machinery Co., Somerset & Mascher Sts., Philadelphia, Pa.
Automatic Twisting-In Machine Co., 309 Broadway, New York.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Collins Bros., Central Falls, R. I.
Draper Co., Hopedale, Mass.
Diamond Textile Machine Works, Diamond & 2d Sts., Philda.
Howard & Bullough, Ltd., Pawtucket, R. I.
Klein, Charles C., Marshall & Cambria Sts., Philadelphia, Pa.
Lowell Machine Shop, Lowell, Mass.
Philadelphia Textile Mchy. Co., Hancock & Somerset Sts., Philadelphia, Pa.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.
Willimantic Machine Co., Willimantic, Conn.

45A SILK MACHINERY. See also 68, Silk Looms.

Atwood-Morrison Co., Stonington, Conn.
Brigham, Arthur A., 186 Devonshire St., Boston, Mass.
Crompton & Knowles Loom Works, Worcester, Mass.
Eastwood, Benjamin, Co., Paterson, N. J.
Hartson, L. M., Co., North Windham, Conn.
Kilburn, Lincoln & Co., Fall River, Mass.
Mason Machine Works, Taunton, Mass.
Royle, John, & Sons, Paterson, N. J.
Schaum & Uhlinger, North Penn Junction, Philadelphia, Pa.
Stafford, George W., Mfg. Co., Readville, Mass.
Webendorfer Machine Co., Paterson, N. J.
Willimantic Machine Co., Willimantic, Conn.

45B STRETCHERS, CLOTH.

Butterworth, W. H., & Sons, Co., York & Cedar Sts., Philda.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Curtis & Marble Machine Co., Worcester, Mass.
Luther, C. A., & Co., Pawtucket, R. I.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R. I.

46 WINDERS. For winding yarn, etc.

47 Balling Machines, Yarn. For winding yarn into balls.

Draper Co., Hopedale, Mass.
Entwistle, T. C., Co., Lowell, Mass.
Franklin Machine Co., Providence, R. I.
Huse, W. D., & Sons, Laconia, N. H.
North Chelmsford Machine Co., North Chelmsford, Mass.
Philadelphia Textile Mchy Co., Hancock & Somerset Sts., Philadelphia, Pa.

BALLING MACHINES, continued

Smith, James, Woolen Mchy. Co., 411 Race St., Philda, Pa.
Torrance Mfg. Co., Harrison, N. J.

48 **Beaming Machines.** For winding warp or chain on the warper beam of a loom.

Altemus, Jacob K., 2818 No. 4th St., Philadelphia, Pa.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Davis & Furber Machine Co., North Andover, Mass.
Draper Co., Hopedale, Mass.
Eastwood, Benjamin, Co., Paterson, N. J.
Entwistle, T. C., Co., Lowell, Mass.
Knapp, Charles H., Paterson, N. J.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowell Machine Shop, Lowell, Mass.
Philadelphia Textile Mchy Co., Hancock & Somerset Sts., Philadelphia, Pa.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.

48A **Bobbin.**

Johnson & Bassett, Worcester, Mass.

49 **Cop and Skein.**

Allen, A. W., 2427 Mascher St., Philadelphia, Pa.
Altemus, Jacob K., 2818 No. 4th St., Philadelphia, Pa.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Branson Machine Co., 506 N. American St., Philadelphia, Pa.
Campbell & Clute, Cohoes, N. Y.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Collins Bros., Central Falls, R. I.
Easton & Burnham Mche. Co., Pawtucket, R. I.
Eastwood, Benjamin, Co., Paterson, N. J.
Foster Machine Co., Westfield, Mass.
Howard & Bullough, Ltd., Pawtucket, R. I.
Lamb Knitting Machine Co., Chicopee Falls, Mass.
Leighton Machine Co., Manchester, N. H.
Lindley, George W., 5120 Wakefield St., Germantown, Philda.
Lindsay & Hyde, E. York St., Philadelphia, Pa.
Payne, George W., Co., Pawtucket, R. I.
Snyder, Homer P., Mfg. Co., Little Falls, N. Y.
Universal Winding Co., 95 South St., Boston, Mass.
Willimantic Machine Co., Willimantic, Conn.

50 **Quillers.** For winding yarn from spools, bobbins or skeins upon quills to be used in shuttles; also for winding the waste from cops.

Altemus, Jacob K., 2818 N. 4th St., Philadelphia, Pa.
Eastwood, Benjamin, Co., Paterson, N. J.
Fairmount Machine Co., 22d & Wood Sts., Philadelphia, Pa.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowell Machine Shop, Lowell, Mass.
Payne, George W., Co., Pawtucket, R. I.
Universal Winding Co., 95 South St., Boston, Mass.
Whitin Machine Works, Whitinsville, Mass.

51 **Reels.** For winding yarn.

Cleveland Machine Works, 150 Harlow St., Worcester, Mass.

REELS, continued

Davis & Furber Machine Co., North Andover, Mass.
Draper Co., Hopedale, Mass.
Eastwood, Benjamin, Co., Paterson, N. J.
Lowell Machine Shop, Lowell, Mass.
Luther, C. A., & Co., Pawtucket, R. I.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.
Whitin Machine Works, Whitinsville, Mass.

52 **Spoolers.**

Altemus, Jacob K., 2818 N. 4th St., Philadelphia, Pa.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Davis & Furber Machine Co., North Andover, Mass.
Draper Co., Hopedale, Mass.
Easton & Burnham Mche. Co., Pawtucket, R. I.
Klein, Charles C., Marshall & Cambria Sts., Philadelphia, Pa.
Lowell Machine Shop, Lowell, Mass.
Payne, George W., Co., Pawtucket, R. I.
Philadelphia Textile Mchy Co., Hancock & Somerset Sts., Philadelphia, Pa.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.
Whitin Machine Works, Whitinsville, Mass.
Willimantic Machine Co., Willimantic, Conn.
Worcester Warp Compressing Machine Co., Worcester, Mass.

53 **Warpers.** See 48, Beaming Machines.

54 **WOOL PREPARING MACHINERY.** For preparing wool, shoddy, etc.; including shake willows, fearnaughts, burr pickers, etc.

Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Curtis & Marble Machine Co., Worcester, Mass.
Davis & Furber Machine Co., North Andover, Mass.
Dodge, C. S., Lowell, Mass.
Gerry, George, & Son, Athol, Mass.
Hood, R. H., 1213 Day St., Philadelphia, Pa.
Philadelphia Textile Mchy Co., Hancock & Somerset Sts., Philadelphia, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, James, Woolen Machinery Co., 411 Race St., Philadelphia, Pa.

55 **PRINT WORKS MACHINERY AND ACCESSORIES.**

Arlington Machine Works, Arlington Heights, Mass.
Birch Bros. Co., Somerville, Mass.
Butterworth, H. W., & Sons Co., York and Cedar Sts., Philadelphia, Pa.
Hope, John, & Sons, Engraving & Mfg. Co., Providence, R. I.
Rice, Barton & Fales Iron & Machine Co., Worcester, Mass.
Taunton-New Bedford Copper Co., New Bedford, Mass.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R.I.
Whittle, James H., Worcester, Mass.

56 **Oil Cloth and Linoleum Printing Machines.**

Dienelt & Eisenhardt, 1304 N. Howard St., Philadelphia, Pa.

OIL CLOTH PRINTING MACHINES, continued

Moore & White Co., 15th St. & Lehigh Ave., Philadelphia, Pa.

57 **SCOURING AND WASHING MACHINES.**

Arlington Machine Works, Arlington Heights, Mass.
Birch Bros. Co., Somerville, Mass.
Butterworth, H. W., & Sons, Co., York & Cedar Sts., Philda, Pa.
Hopkins Machine Works, Bridgeton, R. I.
Hunt, Rodney, Machine Co., Orange, Mass.
Hunter, James, Machine Co., North Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Lorimer Machinery Co., Ontario & Lawrence Sts., Philda, Pa.
Philadelphia Textile Mchy. Co., Hancock and Somerset Sts., Philadelphia, Pa.
Phoenix Iron Works Corporation, Hartford, Conn.
Sargent's, C. G., Sons, Graniteville, Mass.
Textile Finishing Mchy Co., 17 Exchange Place, Providence, R.I.

58 **SLITTING AND REELING MACHINES.** Used in making handkerchiefs.

Cameron, James, 4th Ave. and Baltic St., Brooklyn, N. Y.

59 **SPONGERS, CLOTH.** For sponging and drying cloth in the piece.

Graffield Sponger Co., Jackson, Mich.
Spotless Steam Sponger Co., Cleveland, O.

60 **STAMPING MACHINES.** For stamping the manufacturer's name, etc., on the selvedge of textile fabrics.

Fabric Measuring & Packaging Co., 82 Centre St., New York.
Lowell Machine Shop, Lowell, Mass.

61 **TESTING MACHINES.** For testing the strength of cloth or yarn.

Burke & Hanford, 621 Broadway, New York.
Knapp, Charles H., Paterson, N. J.

62 **WEAVING MACHINERY.**

62A **JACQUARD MACHINES.** Which control the warp threads in the weaving of figured fabrics.

Halton's, Thomas, Sons, Allegheny Av. & C St., Philda, Pa.
Battles, Joseph, Co., Lawrence, Mass.

63 **LOOMS.**

64 **Carpet.**

Alvord, Clinton, Worcester, Mass.
Crompton & Knowles Loom Works, Worcester, Mass.
Lyall, J. & W., Passaic, N. J.
Mason Machine Works, Taunton, Mass.

64A **Rug.** For weaving novelty rugs.

Ross, E., & Co., Toledo, O.

65 **Cotton.**

Asala Co., 1 Greene St., New York.
Crompton & Knowles Loom Works, Worcester, Mass.

LOOMS, COTTON, continued

Draper Co., Hopedale, Mass.
Fairmount Machine Works, 22d & Wood Sts., Philadelphia, Pa.
Kilburn, Lincoln & Co., Fall River, Mass.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Stafford, George W., Mfg. Co., Readville, Mass.
Whitin Machine Works, Whitinsville, Mass.

66 **Jacquard.** For fancy weaving.

Crompton & Knowles Loom Works, Worcester, Mass.
Jackson, James, & Sons, Paterson, N. J.
Lowell Machine Shop, Lowell, Mass.
Schaum & Uhlinger, Glenwood Ave. and 2d St., Philadelphia, Pa.

67. **Jute.** See 64, Carpet Looms.

68 **Silk.** For weaving silk, ribbon, etc.

Asala Co., 1 Greene St., New York.
Crompton & Knowles Loom Works, Worcester, Mass.
Eastwood, Benjamin, Co., Paterson, N. J.
Kilburn, Lincoln & Co., Fall River, Mass.
Mason Machine Works, Taunton, Mass.
Schaum & Uhlinger, Glenwood Ave. and 2d St., Philadelphia. Pa.

69 **Woolen.**

Crompton-Thayer Loom Co., Worcester, Mass.
Crompton & Knowles Loom Works, Worcester, Mass.
Davis & Furber Machine Co., North Andover, Mass.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia. Pa.
Stafford, George W., Mfg. Co., Readville, Mass.

70 **Worsted.**

Asala Co., 1 Greene St., New York.
Crompton & Knowles Loom Works, Worcester, Mass.
Smith. James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.

---

71 TEXTILE MACHINERY ACCESSORIES.

72 BOBBINS, SPOOLS, SHUTTLES, ETC.

American Supply Co., Providence, R. I.
Hall, I. A., & Co., Paterson, N. J.
Jackson, Edward, 214 W. Dauphin St., Philadelphia, Pa.
McGuire, John A., Co., Claremont, N. H.
Murray, Charles O., Nashua N. H.
New England Shuttle Co., Lawrence, Mass.
Porter Shuttle & Bobbin Co., Watertown, Mass.

BOBBINS, SPOOLS, SHUTTLES, ETC., continued

Southern Bobbin Co., Greensboro, N. C.
Southern Shuttle & Bobbin Co., Westminster, S. C.
Tebbetts, E. L., & Co., Lockes Mills, Me.
United States Bobbin & Shuttle Co., Providence, R. I.
Vermont Spool & Bobbin Co., Essex Junction, Vt.
Walder, Jacob, Paterson, N. J.
Woodstock Hardwood & Spool Co., Charleston, S. C.
Woonsocket Reed & Shuttle Works, Woonsocket, R. I.

73 **CARD CLOTHING.** The wire toothed cloth or leather covering the cylinders, rollers, doffers, etc., of a carding machine.

American Card Clothing Co., Worcester, Mass.
Amsterdam Card Clothing Co., Amsterdam, N. Y.
Ashworth, Elijah, Fall River, Mass.
Booth, Benjamin, & Co., Philadelphia, Pa.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Cutler, Aaron T., Worcester, Mass.
Edma Card Clothing Co., Camden, N. J.
Howard Bros. Mfg. Co., Worcester, Mass.
Lombard, N. A. Co., Worcester, Mass.
Parks & Woolson Machine Co., Springfield, Vt.

74 **CARD GRINDERS.**

Entwistle, T. C., Co., Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Philadelphia Textile Mchy. Co., Hancock & Somerset Sts., Philadelphia, Pa.
Roy, B. S., & Sons, Worcester, Mass.
Smith, James, Woolen Mchy. Co., 411 Race St., Philadelphia, Pa.

75 **CARDERS' TOOLS.**

Brown, W. H., Mechanic St., Worcester, Mass.

76 **COMBS, CIRCLES AND FALLERS.**

Bragg, John I., Olneyville, R. I.
Crabb, William, & Co., Newark, N. J.
Crompton & Knowles Loom Works, Worcester, Mass.
Miller, William, Providence, R. I.
North Chelmsford Supply Co., North Chelmsford, Mass.
Philadelphia Textile Mchy. Co., Hancock & Somerset Sts., Philadelphia, Pa.
Townsend, Thomas, 157 Orange St., Providence, R. I.

77 **COMBER NEEDLES.**

Crabb, William, & Co., Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

78 **COP TUBES.**

Douglas Mfg. Co., Fall River, Mass.
Haworth & Watson, Lowell, Mass.
Pairpoint Corporation, New Bedford, Mass.
Sayford Paper Specialty Co., Camden, N. J.

79 **COPPER PRINTING ROLLERS.**

Taunton-New Bedford Copper Co., New Bedford, Mass.
Textile Finishing Mchy. Co., 17 Exchange Place, Providence, R.I.

80 **DYE HOUSE CANS.** See 94, Roving Cans.

81 **DYE STICKS.**

Bailey, Frank, Cedar Brook, N. J.

82 **FLUTED ROLLS.**

Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.
Thurston, A. G., & Son, Fall River, Mass.

83 **HEDDLES.** Upright wires for looms.

American Supply Co., Providence, R. I.
Chase, F. A., & Co., Providence, R. I.
Emmons Loom Harness Co., Lawrence, Mass.
Hall, I. A., & Co., Paterson, N. J.
Howard Bros., Mfg. Co., Worcester, Mass.
Steel Heddle Mfg. Co., Germantown Ave., Philadelphia, Pa.
Walder, Jacob, Paterson, N J.
Watson, L. S., Mfg. Co., Leicester, Mass.

84 **JACQUARD CARDS.**

Case Bros., Highland Park, Conn.
Rogers, H. E., So. Manchester, Conn.

85 **KNITTING MACHINE BURRS.**

Breedon's, Wm., Son, Amsterdam, N. Y.
Cooper, Charles, Bennington, Vt.
Crane Mfg. Co., Lakeport, N. H.
Gormly, Robert, & Co., Troy, N. Y.
Tompkins Bros., Troy, N. Y.

86 **KNITTING NEEDLES.**

Adams, George H., & Co., Hill, N. H.
Cooper, Charles, Bennington, Vt.
Corey, William, Co, Manchester, N. H.
Dodge Needle Co., Manchester, N. H.
Excelsior Needle Co., Torrington, Conn.
Franklin Needle Co., Franklin, N. H.
Freeman Bros., Brattleboro, Vt.
Ives, Loyal T., New Brunswick, N. J.
Lydall, H., & Foulds, Manchester, Conn.
Mayo Knitting Machine & Needle Co., Franklin Falls, N. H.
See adv. page 124.
Mont Clare Needle Co., Mont Clare, Pa.
Page Needle Co., Chicopee Falls, Mass.
Shaw, J. B., Philadelphia, Pa.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co., Lakeport, N. H.
Welthall, John D., Philadelphia, Pa.

87 **KNOTTERS.** For Spoolers.

Barber & Coleman, 11 Pemberton Sq., Boston, Mass.

88 **LABELING MACHINES, HOSIERY.**

Saranac Electric Mfg. Co., St. Joseph, Mich.

89 **LOOM PICKERS.** That part of a picker stick which strikes the shuttle.

Abbott, J. V., Mfg. Co., Dedham, Mass.

LOOM PICKERS, continued

American Supply Co., Providence, R. I.
Barlow, John W., Lawrence, Mass.
Crompton & Knowles Loom Works, Worcester, Mass.
Garland Mfg. Co., Saco, Me.
Jacobs, E. H., Mfg. Co., Danielson, Conn.
Smith, James, & Co., 411 Race St., Philadelphia, Pa.

90 **LOOM STOP MOTIONS.** For automatically stopping the loom without breaking the thread.

Asala Co., 1 Greene St., New York.
Crompton & Knowles Loom Works, Worcester, Mass.
Draper Co., Hopedale, Mass.
Stafford, George W., Mfg. Co., Readville, Mass.
Tucker Stop Motion Co., Winsted, Conn.

91 **PRESSES.** For hosiery and knit goods.

Boomer & Boschert Press Co., Syracuse, N. Y.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Curtis & Marble Mche. Co., Worcester, Mass.
Gessner, David, Worcester, Mass.
Hart, Charles, Frankford, Philadelphia, Pa.
Howard, George C., 2123 Market St., Philadelphia, Pa.
Phillips, Thomas, & Co., Providence, R. I.
Pownall Iron Works, Jamesburg, N. J.
Spence & Rideout, Nashua, N. H.
Textile Finishing Mchy. Co., 17 Exchange Place, Providence, R.I.
Woonsocket Machine & Press Co., Woonsocket, R. I.

92 **REEDS AND HARNESS, LOOM.**

American Supply Co., Providence, R. I.
Crabb, Wm., & Co., Newark, N. J.
Emmons Loom Harness Co., Lawrence, Mass.
Hall, I. A., & Co., Paterson, N. J.
Mears, John W., Manchester, N. H.
Place, M., & Co., Worcester, Mass.
Walder, Jacob, Paterson, N. J.

93 **RING TRAVELERS.** A metal ring or loop that guides the yarn while being wound on a spindle.

American Ring Traveler Co., Providence, R. I.
American Supply Co., Providence, R. I.
Chase, F. A., & Co., Providence, R. I.
De Haven Mfg. Co., Columbia Heights, Brooklyn, N. Y.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Monarch Ring Traveler Co., Providence, R. I.
Morley Button Mfg. Co., Essex St., Boston, Mass.
National Ring Traveler Co., Providence, R. I.
Reliance Ring Traveler Co, Providence, R. I.
Shaw, Victor, Ring Traveler Co., Providence, R. I.

94 **ROVING CANS.** Into which the roving falls after leaving the roving frame.

American Vulcanized Fibre Co., Wilmington, Del.
Getchell, S. S., & Son, Woonsocket, R. I.
Hill, James, Mfg. Co., Providence, R. I.
Pairpont Corporation, New Bedford, Mass

ROVING CANS, continued

Spaulding-Perkins Co., North Rochester, N. H.
Whittle, James H., Worcester, Mass.

95 **SEPARATORS.** For directing the thread when being wound on spindles.

Draper Co., Hopedale, Mass.

96 **SHUTTLE CHECKS.**

Livermore, Homer F., 85 Pearl St., Boston, Mass.
Victor Shuttle Check Co., Auburn, N. Y.

97 **SLASHER COMBS.**

American Supply Co., Providence, R. I.
Emmons Loom Harness Co., Lawrence, Mass.
Entwistle, T. C., Co., Lowell, Mass.

98 **SPINDLES.** For spinning frames.

Bamford & Smith, Pascoag, R. I.
Buckley's, Benjamin, Son, Paterson, N. J.
Cleveland Machine Works, 150 Harlow St., Worcester, Mass.
Draper Co., Hopedale, Mass.
Easton & Burnham Mche. Co., Pawtucket, R. I.
Hopkins Machine Works, Bridgeton, R. I.
Ward & Vandegrift, Elmer, N. J.
Westcott, A. A., & Sons, Hopedale Mass.
Whitin Machine Works, Whitinsville, Mass.
Woonsocket Reed & Shuttle Works, Woonsocket, R. I.

99 **SPINNING CYLINDERS.**

Arguto Oilless Bearing Co., Wayne Junction, Philadelphia, Pa.
Butterworth, H. W., & Sons Co., York & Cedar Sts., Philda.
Hill, James, Mfg. Co., Providence, R. I.
Whittle, James H., Worcester, Mass.

100 **SPINNING RINGS.**

Draper Co., Hopedale, Mass.
Pawtucket Spinning Ring Co., Pawtucket, R. I.
Whitinsville Spinning Ring Co., Whitinsville, Mass.

101 **SPINNING TUBES.**

Bamford & Smith, Pascoag, R. I.
Buckley's, Benjamin, Son, Paterson, N. J.

102 **STAMPS, HOSIERY.**

Atlas Copper Stamp Works, 15 Whitehall St., New York.
Quaker City Stencil & Stamp Works, 234 Arch St., Philda.
Wells, Wilfred, 505 W. Lehigh Av., Philadelphia, Pa.

103 **TAPESTRY PRINTING DRUMS.**

Crompton & Knowles Loom Works, Worcester, Mass.

SECTION VI

HOISTING AND CONVEYING MACHINERY.

INDEX TO DEPARTMENTS.

	Page
Hoisting and Conveying Machinery	524
Industrial Railways	546
Mining Machinery	550

MANUFACTURERS OF

HOISTING AND CONVEYING MACHINERY.

Alphabetical Index.

Acme Road Machinery Co., Frankfort, N. Y.—Winches, Windlasses, etc.
Adams Bros. & Co., 355 31st St., Chicago, Ill.—Hod Elevators.
Adrian Brick & Tile Machine Co., Adrian, Mich.—Hod Elevators, etc.
Aetna Foundry & Machine Co., Springfield, Ill.—Mine Cars.
Albro-Clem Elevator Co., 7th St. & Glenwood Ave., Philadelphia, Pa.—Freight and Passenger Elevators.
Alliance Machine Co., Alliance, O.—Cranes.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.—Mining Machinery.
Alsing, J. R., Co., 75 Guernsey St., Brooklyn, N. Y.—Quartz Mills.
American Air Compressor Works, 26 Cortlandt St., New York.—Pneumatic Elevators.
American Car & Foundry Co., 706 Chestnut St., St. Louis, Mo.—Brick, Clay and Mine Cars, etc.
American Clay Working Mchy. Co., Bucyrus, O.—Brick Trucks, Cars.
American Concentrator Co., Joplin, Mo.—Concentrators, Separators, etc.
American Diamond Rock Drill Co., 95 Liberty St., New York.—Core Drills.
American Engineering Specialty Co., 204 Dearborn St., Chicago, Ill.—Mine Cars.
American Hoist & Derrick Co., St. Paul, Minn.—Cranes, Derricks, Elevators, etc.
American Safety Lamp & Mine Supply Co., Scranton, Pa.—Miners' Lamps, Signaling Apparatus, etc.
American Ship Windlass Co., Providence, R. I.—Winches and Windlasses.
American Steel & Wire Co., The Rookery, Chicago, Ill.—Wire Rope.
American Tool & Machine Co., 109 Beach St., Boston, Mass.—Spiral or Screw Conveyors.
American Tube & Stamping Co., Bridgeport, Conn.—Miners' Lamps.
Ames Plow Co., Quincy Hall, Boston, Mass.—Baggage Trucks.
Anderson, Charles, 18 Lexington Ave., Brooklyn, N. Y.—Hod Elevators.
Anderson, W. H., & Sons, Inc., 44 Macomb St., Detroit, Mich.—Hydraulic and Lifting Jacks.
Anton, George, Monongahela, Pa.—Miners' Lamps.
Archer Iron Works, 34th Place & S. Western Ave. Blvd., Chicago, Ill.—Mine Cars.
Arizona & Sonora Mfg. Co., Nogales, Arizona.—Stamp Mills.
Armstrong Mfg. Co., Bridgeport, Conn.—Miners' Tools.
Armstrong, Geo. F., 411 Cherry St., Philadelphia, Pa.—Warehouse, etc., Trucks.
Arthur Co., 188 Front St., New York.—Grip Hoists.

Atlas Bolt & Screw Co., Cleveland, O.—Trolleys, Tramways, Trucks, etc.
Atlas Pipe Wrench Co., 123 Liberty St., New York.—Miners' Tools.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.—Mine Cars.
Avery Stamping Co., Cleveland, O.—Elevator Buckets.
Bacon, Earle C., 26 Cortlandt St., New York.—Trolleys, Tramways, Mine Cars, etc.
Bain Wagon Co., Kenosha, Wis.—Logging and Lumber Trucks.
Baird Machinery Co., Pittsburg, Pa.—Pneumatic Elevators.
Baker Mfg. Co., Evansville, Wis.—Screw Jacks.
Barber Mfg. Co., Ashtabula, O.—Screw and Wagon Jacks.
Barth Mfg. Co., Milwaukee, Wis.—Jacks.
Bartlett, A. F., & Co., Inc., Saginaw, Mich.—Mine Cars and Cages.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.—Buckets, Conveyors, Elevators, etc.
Bates, James, Sons, Pratt & President Sts., Baltimore, Md.—Freight and Passenger Elevators.
Bates Machine Co., Joliet, Ill.—Wire Mill Trucks.
Bayley, Wm., & Sons Co., 732 Greenbush St., Milwaukee, Wis.—Brick, Logging, Lumber Trucks.
Beall Bros., Alton, Ill.—Miners' Tools.
Belcher & Taylor, Agl. Tool Co., Chicopee Falls, Mass.—Warehouse, etc., Trucks.
Belleville Pump & Skein Works, Belleville, Ill.—Jacks, Mine Cars, etc.
Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.—Trolleys, Tramways, Cranes, etc.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.—Miners' Tools.
Billmeyer & Small Co., York, Pa.—Mine Cars.
Bloomsburg Car Mfg. Co., Bloomsburg, Pa.—Mine Cars.
Bogert & Carlough Co., Paterson, N. J.—Warehouse, etc., Trucks.
Bonnot Co., Canton, O.—Brick, Clay, and Drier Cars.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.—Elevator Boots.
Boston Bridge Works, 47 Winter St., Boston, Mass.—Traveling Cranes.
Boston Gear Works, 152 Purchase St., Boston, Mass.—Sprocket Wheel Chains.
Boston & Lockport Block Co., 160 Commercial St., Boston, Mass.—Blocks, Trucks, etc.
Box, Alfred, Co., Front & Poplar Sts., Philadelphia, Pa.—Cranes, Hoists, etc.
Boyer & Radford, Dayton, O.—Jacks.
Bradlee & Co., 1621 Beach Ave., Philadelphia, Pa.—Chains.
Bray Mfg. Co., Newark, N. J.—Lifting Jacks.
Bridgeport Chain Co., Bridgeport, Conn.—Coil Chains.
Broderick & Bascom Rope Co., 809 N. Main St., St. Louis, Mo.—Derricks, Wire Rope, etc.
Broedesser Elevator Mfg. Co., 512 Commerce St., Milwaukee, Wis.—Freight and Passenger Elevators.
Bronder, G. A., 229 Broadway, New York.—Coal Handling Machinery.
Brown Bros. Mfg. Co., W. Jackson Boulevard & Clinton St., Chicago, Ill. Screw Jacks.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland, O.—Cable Railways, Cranes, etc.
Browning Engineering Co., Collinwood, O.—Cranes, Elevators, etc.
Brunner & Lay, 133 W. Polk St., Chicago, Ill.—Derricks.
Bryant, W. G., Carterville, Mo.—Ore Concentrators.
Buckeye Mfg. Co., Anderson, Ind.—Wagon Jacks.
Bucyrus Co., So. Milwaukee, Wis.—Wrecking Cranes.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.—Mine Cars.
Buffalo Scale Co., Buffalo, N. Y.—Trucks.

Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.—Conveyors, Elevators, etc.
Builders' Elevator Co., 22 Clinton St., Chicago, Ill.—Hod Elevators.
Bullock Electric Mfg. Co., Cincinnati, O.—Cranes.
Burroughs, Chas. Co., 141 Commerce St., Newark, N. J.—Hydraulic Jacks.
Butterworth & Lowe, Grand Rapids, Mich.—Logging and Lumber Trucks.
Byers, John F., Machine Co., Ravenna, O.—Derricks, Elevators, etc.
Byram & Co., Inc., 435 Guoin St., Detroit, Mich.—Cranes, Cars, etc.
Cahill & Hall Elevator Co., San Francisco, Cal.—Freight and Passenger Elevators.
Caird & Hawkesworth, Helena, Mont.—Stamp Mills.
Caldwell Car & Mfg. Co., Caldwell, O.—Mine Cars.
Caldwell, H. W., & Son, Co., Western Ave., & 17th St., Chicago, Ill.—Boots, Buckets, Conveyors, etc.
Carlin, W. J., Co., 25th St. & A. V. Ry., Pittsburg, Pa.—Cars.
Carlins', Thos., Sons, Co., Allegheny, Pa.—Derricks, Trolleys Tramways, etc.
Carr, Joseph B., Co., Troy, N. Y.—Chains.
Case Mfg. Co. Columbus, O.—Cranes, Hand Elevators, etc.
Catawissa Car & Foundry Co., Catawissa, Pa.—Mine Cars.
Chain Belt Co., 766 Park St., Milwaukee, Wis.—Link Belt Conveyors, etc.
Chambersburg Engineering Co., Chambersburg, Pa.—Cranes.
Chapman Jack Co., Cleveland, O.—Screw Jacks.
Chase Machine Co., 111 Elm St., Cleveland, O.—Winches and Windlasses.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.—Mine Cars.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.—Cranes, Elevators, etc.
Chickasaw Iron Works, 98 2d St., Memphis, Tenn.—Elevators, Trucks.
Chillcott-Evans Chain Co., 652 Preble Ave., Allegheny, Pa.—Chains.
Chisholm & Moore Mfg. Co., Lake, near Kirtland Sts., Cleveland, O.—Hoists, Trolleys, etc. *See adv. page 120.*
City Machine Co., Cleveland, O.—Hydraulic Jacks.
Clark, Alexander & Co., Quincy, Mass.—Derricks.
Clark, George P., Co., Windsor Locks, Conn.—Trucks.
Clark, W. J., Co., Salem, O.—Buckets.
Cleveland Block Co., 163 River St., Cleveland, O.—Tackle Blocks.
Cleveland Crane & Car Co., Wickliffe, O.—Cranes, Cars, etc.
Cleveland Elevator Bucket Co., 225 St. Clair St., Cleveland, O.—Elevator Buckets.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.—Trolleys and Tramways.
Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.—Trolleys and Tramways.
Colorado Iron Works Co., Denver, Colo.—Mine Cars, Cages, etc.
Columbus Chain Co., Columbus, O.—Chains.
Comstock, George S., Mechanicsburg, Pa.—Trucks.
Connellsville Machine & Car Co., Connellsville, Pa.—Mine Cars, Cages.
Contractors Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.—Cranes, Derricks, etc.
Covert Mfg. Co., Watervliet, N. Y.—Wagon Jacks.
Cram, D. H., Powers St., Boston, Mass.—Derricks.
Crane, A. M., & Co., The Rookery, Chicago, Ill.—Track Jacks.
Crawford & McCrimmon Co., Brazil, Ind.—Hoisting Drums.
Cresson, Geo. V., Co., Allegheny Ave., West of 17th St., Philadelphia, Pa.—Ore Concentrators.
Cummings, W. J., Wellston, O.—Miners' Tools.
Curtis & Co. Mfg. Co., 2201 Washington Ave., St. Louis, Mo.—Cranes, Elevators, etc.

Cyclone Drilling Machine Co., Orrville, O.—Mining Drills.
Dake Engine Co., Grand Haven, Mich.—Elevators, Winches and Windlasses.
Dallett, Thomas H., & Co., York St. & Sedgley Ave., Philadelphia, Pa.—Electric Cranes.
Danville Foundry & Machine Co., Danville, Ill.—Mine Cars.
Davis Calyx Drill Co., 128 Broadway, New York.—Core Drills.
Davis, F. M., Iron Works Co., 8th & Larimer Sts., Denver, Col.—Mine Cars, Cages, etc.
Davis-Price Foundry & Machine Co., New Cumberland, W. Va.—Brick Trucks.
Day, J. H., & Co., Cincinnati, O.—Warehouse, etc., Trucks.
Dederick's, P. K., Sons, Albany, N. Y.—Drums, Hand Elevators, etc.
Defiance Box Co., Defiance, O.—Warehouse, etc., Trucks.
De Loach Mill Mfg. Co., Atlanta, Ga.—Logging and Lumber Trucks.
Denver Engineering Works Co., Blake & 30th Sts., Denver Col.—Electric Elevators, Mine Cars, etc.
Dienelt & Eisenhardt, 1308 Howard St., Philadelphia, Pa.—Hydraulic Jacks.
Dietz, Fred, Co., 1102 Madison Ave., Indianapolis, Ind.—Warehouse, etc., Trucks.
Ding's Electro-Magnetic Separator Co., Milwaukee, Wis.—Magnetic Separators.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.—Cranes, Elevators.
Dodge Cold Storage Co., Nicetown, Philadelphia, Pa.—Coal and Ore Machinery.
Dodge Mfg. Co., Mishawaka, Ind.—Conveyors, Pneumatic Elevators, etc.
Dubuar, J. A., Mfg. Co., Northville, Mich.—Tackle Blocks.
Dudgeon, Richard, 24 Columbia St., New York.—Hydraulic and Screw Jacks.
Duff Mfg. Co., 405 Marion Ave., Allegheny, Pa.—Jacks.
Dunn, Jas. P., 207 Dunham Ave., Cleveland, O.—Chain Hoists.
Durable Wire Rope Co., 28 Atlantic Ave., Boston, Mass.—Wire Rope.
Dyer Bros., 240 Montgomery St., San Francisco, Cal.—Quartz Mills.
Eagle Iron Works, Terre Haute, Ind., Mine Cars, Cages, etc.
Eastern Machinery Co., New Haven, Conn.—Drums, Trucks, etc.
Eaton & Prince Co., Chicago, Ill.—Freight and Passenger Elevators.
Edelmeyer & Morgan Hod Elevator Co., 333 W. 59th St., New York.—Hod Elevators.
Edmonds, F. A., 144 Champlin St., Cleveland, O.—Freight and Passenger Elevators.
Elektron Mfg. Co., Springfield, Mass.—Electric Elevators.
Elkhart Frog & Crossing Works, Elkhart, Ind.—Track Jacks.
Ellison, Wm., & Sons, Mfg. Co., 1018 No. 6th St., St. Louis, Mo.—Mine Cars, Cages, etc.
Empire Engine & Motor Co., Orangeburg, N. Y.—Hoists, Winches, Windlasses, etc.
Erie Car Works, Erie, Pa.—Brick and Clay Cars.
Eureka Tackle Block Co., 442 E. Front St., Cincinnati, O.—Tackle Blocks.
Eureka Mower Co., Utica, N. Y.—Wagon Jacks.
Everhart Brass Works, Scranton, Pa.—Miners' Lamps, etc.
Ewart Mfg. Co., Chicago, Ill.—Sprocket Wheel Chains.
Exeter Machine Works, Pittston, Pa.—Mine Cars, etc.
Fairbanks Co., Broome & Elm Sts., New York.—Trucks.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.—Jacks, Mine Cars, etc.
Farmers' Handy Wagon Co., Saginaw, Mich.—Logging and Lumber Trucks.

Farquhar, A. B., Co., Ltd., York, Pa.—Warehouse, etc., Trucks.
Farrell Foundry & Machine Co., Ansonia, Conn.—Swing Cranes.
Faunt, Le Roy, & Co., Baltimore, Md.—Freight and Passenger Elevators.
Federal Mfg. Co., American Trust Bldg., Cleveland, O.—Chains.
Fernholtz Brick Machinery Co., Boyle & Old Manchester Aves., St. Louis, Mo.—Brick Trucks.
Fish Bros. Wagon Co., Racine, Wis.—Logging and Lumber Trucks.
Flint-Lomax Electric & Mfg. Co., Denver, Col.—Signaling Apparatus.
Flory, S., Mfg. Co., Bangor, Pa.—Conveyors, Derricks, etc.
Franklin Machine & Tool Co., Franklin, Pa.—Escalators.
Franklin Portable Crane & Hoist Co., Franklin, Pa.—Portable Cranes.
Freeman, J. W., Joplin, Mo.—Winches, Windlasses, etc.
Freese, E. M., & Co., Galion, O.—Brick and Clay Cars.
Frenier, J. H., Rutland, Vt.—Ore Feeders.
Fritsch, Arthur, Foundry & Machine Co., St. Louis, Mo.—Ore Concentrators.
Fulton Iron Works, San Francisco, Cal.—Ore Concentrators, etc.
Gardner Electric Drill & Mchy. Co., Cleveland, O.—Core and Hand Drills.
Gardner Elevator Co., Detroit, Mich.—Freight and Passenger Elevators.
Garland, M., Co., Bay City, Mich.—Conveyors.
Garry Iron & Steel Co., Coe & Lake Sts., Cleveland, O.—Cranes, Trolleys, Tramways, etc. *See adv. page 127.*
General Electric Co., Schenectady, N. Y.—Cranes, Derricks, etc.
General Pneumatic Tool Co., Montour Falls, N. Y.—Pneumatic Cranes, Elevators, etc.
Georgia Car & Mfg. Co., Savannah, Ga.—Trucks, Cars, etc.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.—Logging and Lumber Trucks.
Gilford Bros., Hudson, N. Y.—Bucket Elevators.
Globe Iron Works, Inc., Stockton, Cal.—Mine Cars, Stamp Mills.
Gold & Silver Extraction Co., Denver, Colo.—Ore Separators.
Goulds Mfg. Co., Seneca Falls, N. Y.—Screw Jacks.
Grand Rapids Hand Screw Co., Grand Rapids, Mich.—Warehouse, etc., Trucks.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.—Elevator Buckets.
Greystone Mfg. Co., Greystone, Conn.—Coil Chains.
Grote Mfg. Co., Evansville, Ind.—Freight and Passenger Elevators.
Grotenrath, Fred, 111 W. Water St., Milwaukee, Wis.—Conveyors, etc.
Hagerstown Foundry Co., Hagerstown, Md.—Lifting Jacks.
Haiss, George Mfg. Co., 141st St. & Rider Ave., New York.—Coal Handling Machinery.
Hallidie-Painter Tramway Co., Fremont & Mission Sts., San Francisco, Cal.—Trolleys, Tramways, etc.
Hammond Mfg. Co., Portland, Ore.—Stamp Mills, etc.
Hanna Engineering Works, 820 Elston Ave., Chicago, Ill.—Pneumatic Elevators.
Hardsocg, Martin, Mfg. Co., Ltd., Allegheny, Pa.—Miners' Tools.
Harman & Hassert, Bloomsburg, Pa.—Mine Cars.
Harrington, Edwin, Son, & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.—Traveling Cranes, Elevators, etc.
Harvey, H. H., 606 Atlantic Ave., Boston, Mass.—Derricks, Jacks, etc.
Hasenzahl, William, Cincinnati, O.—Hand Drills.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.—Dredge Chains.
Haskell & Barker Car Co., Michigan City, Ind.—Mine Cars.
Hassell Iron Works Co., Colorado Springs, Col.—Hand Elevators.
Hathorn Foundry & Machine Co., Mason City, Ia.—Brick and Clay Cars.

Haughton Elevator & Machine Co., Toledo, O.—Elevators.
Hayden-Corbett Chain Co., Columbus, O.—Chains.
Hayden, P. Saddlery Hardware Co., Columbus, O.—Grinding Pans.
Hayward Co., 97 Cedar St., New York.—Derricks, etc.
Hazard Mfg. Co., Wilkesbarre, Pa.—Wire Rope.
Heimann, A., & Bro., Massillon, Ohio.—Mine Cars.
Helmick Foundry & Machine Co., Fairmont, W. Va.—Mine Cars, Tipples.
Hempfield Foundry Co., Ltd., Greensburg, Pa.—Mine Cars.
Henderer's, A. L., Sons, Wilmington, Del.—Jacks.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.—Winches, Windlasses, Mining Cages, etc.
Hercules Electric Drill Co., 32 Broadway, New York.—Electric Drills.
Hendy, Joshua, Machine Works, San Francisco, Cal.—Quartz and Stamp Mills, etc.
Hersey Mfg. Co., South Boston, Mass.—Trolleys and Tramways.
Heyl & Patterson, 51 Water St., Pittsburg, Pa.—Mine Tipples.
Herzler-Henninger, Machine Works, Belleville, Ill.—Mine Cars.
Hinds, Thomas, Malone, N. Y.—Derricks.
Hoffman, Chas. W., Co., 309 W. 36th St., New York.—Freight and Passenger Elevators.
Hoisting and Conveying Machinery Co., 44 N. Elizabeth St., Chicago, Ill. Cranes, Derricks, etc.
Holmes & Blanchard Co., 37 Washington St. N., Boston, Mass. Freight and Passenger Elevators.
Hoopes & Townsend Co., 1330 Buttonwood St., Philadelphia.—Chains.
Horton Mfg. Co., Painesville, O.—Brick and Clay Cars.
Hoshor-Platt Co., 120 Liberty St., New York.—Industrial Railway Equipment.
Howard Iron Works, Buffalo, N. Y.—Freight and Passenger Elevators.
Howe Scale Co., Rutland, Vt.—Trucks.
Howell, R. R., & Co., Minneapolis, Minn.—Jacks.
Howell's Mining Drill Co., Plymouth, Pa.—Hand and Pneumatic Drills.
Hughes Bros., Scranton, Pa.—Miners' Lamps.
Hunt, Alexander E., Scranton, Pa.—Miners' Lamps.
Hunt, C. W., Co., 45 Broadway, New York.—Coal Handling Machinery.
Hyde Windlass Co., Bath, Me.—Winches and Windlasses.
Illinois Iron & Bolt Co., Carpentersville, Ill.—Jacks.
Illinois Malleable Iron Co., 30 West Monroe St., Chicago, Ill.—Elevator Buckets.
Indiana Chain Works, Jeffersonville, Ind.—Chains.
Industrial Works, Bay City, Mich.—Cranes.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.—Pneumatic Drills, etc.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.—Mine Cars, Conveyors, etc.
Jackson Mfg. Co., Harrisburg, Pa.—Mine Cars, etc.
Jacobs, Chas. C., Bridge & Iron Works, Amboy, Ill.—Electric Cranes, Derricks.
Jeffrey Mfg. Co., Columbus, O.—Conveyors, Elevators, etc. *See adv. page 122.*
Johnston Foundry & Machine Co., Reading, Pa., Traveling Cranes.
Jones & Laughlin Steel Co., Pittsburg, Pa.—Chains, Cranes, etc.
Joyce-Cridland Co., Wyandot & Railroad Sts., Dayton, O.—Jacks.
Justice, Philip S., & Co., 14 No. 5th St., Philadelphia, Pa.—Jacks.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.—Jacks, Mine Cars.
Kelly & Jones Co., Pittsburg, Pa.—Miners' Tools.
Kenney & Co., Scottdale, Pa.—Mine Cars, Cages, etc.

Kent Mill Co., 170 Broadway, New York.—Quartz Mills.
Keystone Driller Co., Beaver Falls, Pa.—Samplers or Testers.
Keystone Drop Forge Works, Chester, Pa.—Shackle Hooks.
Kieckhefer, A., Elevator Co., 1026 St. Paul Ave., Milwaukee, Wis.—Freight, Passenger, Hod Elevators.
Kilbourne & Jacobs Mfg. Co., Columbus, O.—Trucks. *See adv. page 21.*
Kimball Bros., Council Bluffs, Ia.—Freight and Passenger Elevators.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.—Logging and Lumber Trucks.
Kinkade & Liggett Co., Columbus, O.—Freight and Passenger Elevators.
Kinsley Iron & Machine Co., Canton, Mass.—Screw Jacks.
Klein, Charles C., Marshall & Cambria Sts., Philadelphia, Pa.—Belt Conveyors.
Klemm, E. R., 103 W. Monroe St., Chicago, Ill.—Jacks, Winches and Windlasses.
Knell Air Brake Co., Battle Creek, Mich.—Pneumatic Elevators.
Knight Mfg. Co., Canton, O.—Logging and Lumber Trucks.
Knoxville Foundry & Machine Co., Knoxville, Tenn.—Ore Concentrators.
Kramer Wagon Co., Oil City, Pa.—Logging and Lumber Trucks.
Krogh Mfg. Co., 9 Stevenson St., San Francisco, Cal.—Quartz Mills.
Lake Shore Engine Works, Marquette, Mich.—Derricks.
Lambert Hoisting Engine Co., 115 Poinier St., Newark, N. J.—Hoisting Drums, Elevators, etc.
Lane Bros. Co., Poughkeepsie, N. Y.—Chain Hoists, Wagon Jacks.
Lane Mfg. Co., Montpelier, Vt.—Traveling Cranes, etc.
Lansing Wheelbarrow Co., Lansing, Mich.—Trucks, Mine Cars.
Lazier Gas Engine Co., Buffalo, N. Y.—Pumping Jacks.
Leatheroid Mfg. Co., Kennebunk, Me.—Warehouse, etc., Trucks.
Le Count, Wm. G., So. Norwalk, Conn.—Screw Jacks.
Le Grand Mine Drill Works, Wilkesbarre, Pa.—Steam Drills.
Lehigh Car Wheel & Axle Works, Catasauqua, Pa.—Brick, Clay, Mine Cars.
Leschen, A., & Sons, Rope Co., 920 N. 1st St., St. Louis, Mo.—Derricks, Trolleys, Tramways, etc.
Lewis Foundry & Machine Co., 1001 Bingham St., Pittsburg, Pa.—Cranes.
Lidgerwood Mfg. Co., 96 Liberty St., New York.—Derricks, Elevators.
Lima Locomotive & Machine Co., Lima, O.—Mine Cars, etc.
Lincoln Iron Works, Rutland, Vt.—Cranes, Derricks.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.—Link-Belt Conveyors, etc.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.—Conveyors, Ore Washers, etc.
Link, E. M., Machinery Co., Erie, Pa.—Logging and Lumber Trucks.
Litchfield Foundry & Machine Co., Litchfield, Ill.—Mine Cars, Electric Elevators, etc.
Llewellyn Iron Works, Los Angeles, Cal.—Ore Concentrators, Stamp Mills.
Locke Steel Belt Co., Bridgeport, Conn.—Sprocket Wheel Chains.
Lombard Iron Works & Supply Co., Augusta, Ga.—Stamp Mills.
Lord, Bowler & Co., 35 Center St., Cleveland, O.—Derricks, Hand Elevators.
Louisville Elevator Co., Louisville, Ky.—Freight and Passenger Elevators.
Lovejoy, T. H., 90 Ohio St., Chicago, Ill.—Screw Jacks.
Lucas, A., & Sons, Inc., Peoria, Ill.—Mining Cages.
Luedinghaus & Espencheid Wagon Co., 1713 N. Broadway, St. Louis, Mo.—Logging and Lumber Trucks.

McCabe Hanger Mfg. Co., 425 W. 25th St., New York.—Trolleys and Tramways.
McCoy, Jos. F., Co., 157 Chambers St., New York.—Jacks.
McCoy-Linn Iron Co., Milesburg, Pa.—Chains.
McFarlane & Co., Denver, Col.—Stamp Mills.
McKay, Jas., & Co., 29th St. & Liberty Ave., Pittsburg, Pa.—Chains.
McKiernan Drill Co., 170 Broadway, New York.—Steam Drills.
McKinney Mfg. Co., Allegheny, Pa.—Trucks.
McLagon Foundry Co., New Haven, Conn.—Screw Jacks.
McLanahan Stone Machine Co., Hollidaysburg, Pa.—Washing Machines.
McLauthlin, Geo. T. Co., 120 Fulton St., Boston, Mass.—Elevators.
McMillan's, W. H., Sons, 153 South St., New York.—Tackle Blocks.
McMyler Mfg. Co., 180 Columbus St., Cleveland, O.—Dock Equipment Machinery.
Macbeth Iron Co., Cleveland, O.—Clam Shell Buckets.
Mackintosh, Hemphill & Co., Pittsburg, Pa.—Hydraulic Cranes.
Macomber & Whyte Rope Co., 19-21 So. Canal St., Chicago, Ill.—Trolleys, Tramways, etc.
Mansfield Engineering Co., Mansfield, O.—Cranes.
Marine Iron Co., Bay City, Mich.—Mine Cars, Cages.
Marine Mfg. & Supply Co., 158 South St., New York.—Winches and Windlasses.
Marion Steam Shovel Co., Marion, O.—Cranes.
Maris Bros., 56th St. & Gray Ave., Philadelphia, Pa.—Cranes, Trolleys, Tramways.
Marseilles Mfg. Co., Marseilles, Ill.—Elevator Boots, Buckets.
Marshall Car Wheel & Foundry Co., Marshall, Tex.—Trucks.
Marshutz & Cantrell, Main & Howard Sts., San Francisco, Cal.—Quartz Mills, etc.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.—Trucks, Cars.
Marvin Electric Drill Co., Binghamton, N. Y.—Electric Drills.
Maryland Foundry & Machine Co., Baltimore, Md.—Elevators.
Mason, Volney W., & Co., Providence, R. I.—Elevators, Hoists.
Maynard, C. T., & Co., Fairhaven, Vt.—Lifting Jacks.
Mead, John A., & Co., 11 Broadway, New York—Coal Handling Machinery, etc.
Means Foundry & Machine Co., Steubenville, O.—Dryer Cars.
Mecklenburg Iron Works, Charlotte, N. C.—Hoists, Stamp Mills, etc.
Merralls Mill Co., San Francisco, Cal.—Stamp Mills.
Merriman Bros., 162 Commercial St., Boston, Mass.—Blocks.
Messinger Mfg. Co., Tatamy, Pa.—Trucks.
Mey Chain Belting & Engineering Works, 114 Perry St., Buffalo, N. Y. Buckets, Conveyors, Elevators.
Michigan Brick & Tile Machine Co., Morenci, Mich.—Brick Trucks.
Michigan Mfg. & Lumber Co., Holly, Mich.—Trucks.
Michigan Wheelbarrow & Truck Co., Saginaw, Mich.—Trucks.
Milholland, J. & B., Co., 718 5th Ave., Pittsburg, Pa.—Wire Rope.
Millers Falls Co., Millers Falls, Mass.—Screw Jacks.
Mine & Smelter Supply Co., Denver, Col.—Derricks, etc.
Minneapolis Steel & Mchy. Co., 2854 Minnehaha Ave., Minneapolis, Minn.—Mine Tipples.
Moline Elevator Co., Moline, Ill.—Elevators.
Monongahela Iron & Steel Co., Hope Church, Pa.—Chains.
Monongahela Mfg. Co., Monongahela, Pa.—Mine Cars, Cages, Tipples.
Moon Elevator Co., 8th & Mulanphy Sts., St. Louis, Mo.—Elevators.
Morden Frog & Crossing Works, The Rookery, Chicago, Ill.—Track Jacks.
Morgan Construction Co., Worcester, Mass.—Cranes, Trucks.

Morgan Engineering Co., Alliance, O.—Cranes, Derricks.
Morse, Williams & Co., Inc., Philadelphia, Pa.—Elevators. *See adv. page 121.*
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.—Cranes, Trucks, Cars.
Moyer, J. W., & Co., 1736 N. Howard St., Philadelphia, Pa.—Cranes, Hoists, Trolleys and Tramways.
Muirhead, John, & Son, Pittston, Pa.—Core Drills.
Mullen, John, & Son, Shamokin, Pa.—Mine Tipples.
Mundy, J. S., 22 Prospect St., Newark, N. J.—Derricks, Trolleys, Tramways, etc.
Munnsville Plow Co., Munnsville, N. Y.—Screw Jacks.
Murray, D. J., Mfg. Co., Wausau, Wis.—Trucks.
Murtaugh, James, 202 E. 42d St., New York.—Elevators.
Myers, F. E., & Bro., Ashland, O.—Pumping Jacks.
Nason Mfg. Co., 71 Beekman St., New York.—Pneumatic Hoists.
National Blower Works, Milwaukee, Wis.—Drier Cars.
National Elevator & Machine Co., Scranton, Pa.—Elevators.
National Fulton Brass Mfg. Co., Detroit, Mich.—Blocks.
National Hoist & Machine Co., 463 W. 22d St., Chicago, Ill.—Derricks, Elevators.
National Iron Works, Inc., Spokane, Wash.—Stamp Mills.
National Steel & Wire Co., New Haven, Conn.—Wire Rope.
Nelsonville Foundry & Machine Co., Nelsonville, O.—Cars, Cages, etc.
New Albany Mfg. Co., New Albany, Ind.—Cranes.
New Castle Forge & Bolt Co., New Castle, Pa.—Chains.
Newell, J. F., & Co., Gardiner, Me.—Jacks.
Newhall Chain, Forge & Iron Co., 15 Murray St., New York.—Chains.
New Jersey Foundry & Machine Co., 9 Murray St., New York.—Coal and Ore Handling Machinery, Trolleys, etc.
New London Vise Works, 20 Division St., New London, Conn.—Jacks.
Ney Mfg. Co., Canton, O.—Hoists.
Niles-Bement-Pond Co., 136 Liberty St., New York.—Cranes, Hoists, Jacks.
Niles Boiler Co., Niles, O.—Core Oven Cars.
Nordyke & Marmon Co., Indianapolis, Ind.—Elevator Boots, Buckets.
Norman & Evans, Lockport, N. Y.—Coal and Ore Handling Machinery.
North Alabama Engineering Co., New Decatur, Ala.—Trolleys, Trucks.
North Penn Iron Co., North Penn Junction, Philadelphia, Pa.—Cranes.
Northern Engineering Works, Detroit, Mich.—Cranes, Elevators, Cars.
Northwestern Iron Works, Seattle, Wash.—Stamp Mills.
Norton, A. O., 236 Congress St., Boston, Mass.—Jacks.
Nutting Truck Co., Faribault, Minn.—Trucks.
Obenberger, J. G., Co., 123 Barclay St., Milwaukee, Wis.—Buckets.
Ohio Ceramic Engineering Co., 50 Fall St., Cleveland, O.—Cars.
Olsen Tinius & Co., 500 12th St., Philadelphia, Pa.—Hoists.
Oneida Community, Ltd., Niagara Falls, N. Y.—Chains.
Oram, John S., 160 Coe St., Cleveland, O.—Barrel Elevators.
Otis Elevator Co., Yonkers, N. Y.—Elevators, etc.
Ottumwa Iron Works, Ottumwa, Ia.—Cars, Cages, etc.
Parkhurst Bros., & Co., 218 Kentucky Ave., Indianapolis, Ind.—Elevators.
Patch, F. R., Mfg. Co., Rutland, Vt.—Derricks and Channeling Machines.
Pawling & Harnischfeger, Milwaukee, Wis.—Cranes, Hoists, etc.
Paxson, J. W., Co., 1021 N. Delaware Ave., Philadelphia, Pa.—Trucks.
Peacock's Iron Works, Selma, Ala.—Trucks and Cars.
Peck, Stow & Wilcox Co., Southington, Conn.—Jacks.
Pedrick & Ayer Co., Plainfield, N. J.—Cranes, Hoists, etc.
Pelky, W. H., Fair Haven, Vt.—Jacks.

Pennsylvania Iron Works Co., 50th St. & Lancaster Ave., Philadelphia, Pa.—Hoists.
Peteler Portable Railway Mfg. Co., Minneapolis, Minn.—Tracks.
Pettibone, Mulliken & Co., 204 Dearborn St., Chicago, Ill.—Jacks.
Philadelphia Pneumatic Tool Co., 21st St. & Allegheny Ave., Philadelphia, Pa.—Hoists.
Phillips, Doup & Co., 56 Pearl St., Brooklyn, N. Y.—Buckets, Trucks, Cars.
Phillips & McLaren, Pittsburg, Pa.—Grinding Pans.
Phillips Mine & Mill Supply Co., Pittsburg, Pa.—Cars, Miners' Tools.
Pie, Justin J. (Estate of), Osceola Mills, Pa.—Cars.
Plunger Elevator Co., Worcester, Mass.—Elevators.
Phoenix Electrical Mfg. Co., Mansfield, O.—Hoists.
Pilling Air Engine Works, Bucyrus, O.—Hoists.
Pittsburg Tool & Drop Forge Co., Arrott Bldg., Pittsburg, Pa.—Jacks.
Pneumatic Engineering Co., 128 Broadway, New York.—Hoists.
Pollard, Jos. G., 141 Raymond St., Brooklyn, N. Y.—Derricks.
Pollock, Wm. B., Co., Youngstown, O.—Cars.
Poole Engineering & Machine Co., Baltimore, Md.—Hoisting Drums.
Portable Electric Power & Light Co., Jersey City, N. J.—Miners' Lamps.
Portage Lake Foundry & Machine Co., Hancock, Mich.—Stamp Mills.
Port Huron Air Tool Co., Port Huron, Mich.—Hoists.
Port Huron Engine & Thresher Co., Port Huron, Mich.—Chains.
Portland Co., Inc., Portland, Me.—Elevators.
Potts, C. & A., Co., Indianapolis, Ind.—Trucks.
Power & Mining Machinery Co., 52 William St., New York.—Elevators, Cars, Cages, etc.
Preslar-Crawley Mfg. Co., Cincinnati, O.—Drills.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.—Cars.
Puffer-Hubbard Mfg. Co., Minneapolis, Minn.—Trucks.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.—Miners' Lamps.
Racine Steel & Iron Mfg. Co., Racine, Wis.—Jacks.
Railway Applances Co., Old Colony Bldg., Chicago, Ill.—Hoists.
Ramapo Iron Works, Hillburn, N. Y.—Cars.
Rand Drill Co., 128 Broadway, New York.—Channeling Machines, Drills, etc. *See adv. page 122.*
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.—Derricks, Hoists.
Raymond, C. W., & Co., Dayton, O.—Trucks and Cars.
Raymond Bros., Impact Pulverizer Co., 143 Laflin St., Chicago, Ill.—Mills, Ore Separators.
Reading Crane & Hoist Works, Reading, Pa.—Cranes, Trolleys, etc.
Reedy, D. V., & Co., Indianapolis, Ind.—Elevators.
Reedy, H. J., Co., Cincinnati, O.—Elevators.
Reedy, J. W., Elevator Mfg. Co., Chicago, Ill.—Elevators.
Reedy Elevator Co., 407 W. 14th St., New York.—Elevators.
Reilly & Fearon, 1145 N. 3d St., Philadelphia, Pa.—Conveyors.
Reno Inclined Elevator Co., 551 W. 35th St., New York.—Escalators.
Rhode Island Elevator & Machine Co., Providence, R. I.—Elevators.
Richmond, A. K., & Son, 511 E. 5th St., Boston, Mass.—Derricks.
Richmond Machine Works, Richmond, Ind.—Trucks.
Ridgway, Craig & Son Co., Coatesville, Pa.—Cranes, Elevators, etc.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philadelphia, Pa.—Cranes, Jacks.
Risdon Iron & Locomotive Works, San Francisco, Cal.—Cars, Cages, Stamp Mills, etc.
Rix Compressed Air & Drill Co., 396 Mission St., San Francisco, Cal.—Hoists.
Robins Conveying Belt Co., Park Row Bldg., New York.—Coal and Ore Handling Machinery, etc.

Robinson & Co., Richmond, Ind.—Trucks.
Robinson & Fosbrook, Fieldsboro, N. J.—Chains.
Roebling, John A., Sons, Co., 117 Liberty St., New York.—Cableways.
Rogers Iron Co., Springfield, O.—Cranes.
Ross, Charles, & Son Co., 16-20 Steuben St., Brooklyn, N. Y.—Ore Samplers or Testers.
Round, D., & Son, 2287 Broadway, Cleveland, O.—Chains, Hoists, etc.
Rumsey & Co., Ltd., Seneca Falls, N. Y.—Jacks.
Russell, Albert, & Sons, Co., Newburyport, Mass.—Winches and Windlasses.
Russel Wheel & Foundry Co., Detroit, Mich.—Cranes, Trucks, Cars.
St. Cloud Iron Works, St. Cloud, Minn.—Derricks.
Salmon Iron Co., Freeland, Pa.—Cars.
Scaife, Wm. B., & Sons Co., 221 1st Ave., Pittsburg, Pa.—Cars, Ore Washers, etc.
Scaife Foundry & Machine Co., 28th & Smallman Sts., Pittsburg, Pa.—Winches and Windlasses.
Schriver, O. P., & Co., 208 Elm St., Cincinnati, O.—Trucks.
Schwartz, M., & Son, Chillicothe, O.—Jacks.
Scott's Patent Brick Car Co., Knoxville, Tenn.—Trucks and Cars.
Scranton Supply & Machinery Co., Scranton, Pa.—Miners' Tools.
Sedgwick Machine Works, Poughkeepsie, N. Y.—Elevators and Hoists.
See, A. B., Electric Elevator Co., 220 Broadway, New York.—Elevators.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.—Cranes, Hoists.
Shaw Electric Crane Co., Muskegon, Mich.—Cranes.
Sheffer, B. F., Glen Rock, Pa.—Lifting Jacks.
Sheffield Car Co., Three Rivers, Mich.—Cranes, Trucks, Cars.
Shepard, Sidney, & Co., Buffalo, N. Y.—Miners' Lamps.
Shriver, T., & Co., 333 E. 56th St., New York.—Cranes.
Sidney Steel Scraper Co., Sidney, O.—Trucks.
Skillin & Richards Mfg. Co., 147 Fulton St., Chicago, Ill.—Elevator Boots.
Slingsby, H. C., 156 West St., New York.—Trucks.
Smith, I. L., Evansville, Ind.—Trucks.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.—Trucks.
Smith, Theodore, & Sons, Co., Foot of Essex St., Jersey City, N. J.—Buckets, Derricks.
Smith, Whitcomb & Cook Co., Barre, Vt.—Cranes, Derricks.
Somers, Fitler & Todd Co., Pittsburg, Pa.—Miners' Lamps, Tools.
Southern Engine & Boiler Works, Inc., Jackson, Tenn.—Trucks.
Speidel, J. G., Reading, Pa.—Cranes, Derricks, etc.
Spicer Mfg. Co., New Philadelphia, O.—Trucks, Mine Cars.
Springfield Elevator & Pump Co., Springfield, Mass.—Elevators.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.—Chains.
Standard Diamond Drill Co., Monadnock Blk., Chicago, Ill.—Core Drills.
Standard Dry Kiln Co., Indianapolis, Ind.—Brick Cars, Trucks.
Standard Machine Works, Newark, N. J.—Lifting Jacks.
Standard Plunger Elevator Co., 1 Broadway, New York.—Elevators.
Standard Railway Equipment Co., Union Trust Bldg., St. Louis, Mo.—Pneumatic Hoists.
Standard Saw Mill Machinery Co., Erie, Pa.—Trucks.
Star Mfg. Co., New Lexington, O.—Mine Cars.
Starr, W. C., & Son, Richmond, Ind.—Chains.
Stearns-Roger Mfg. Co., 1718 California St., Denver, Col.—Concentrators, Stamp Mills.
Steel Cable Engineering Co., 92 State St., Boston, Mass.—Conveyors, Elevators, Cars.

Steele, J. C., & Son, Statesville, N. C.—Brick Cars, Trucks.
Stevenson Co., Wellsville, O.—Brick Cars.
Stillwell-Bierce & Smith-Vaile Co., Dayton, O.—Jacks, Quartz Mills.
Stine, S. B., & Son, Osceola Mills, Pa.—Mining Cars, Cages.
Stokes & Parish Elevator Co., 30th & Chestnut Sts., Philadelphia, Pa.—Elevators.
Storms Mfg. Co., Newark, N. J.—Elevators.
Stowell Mfg. & Foundry Co., South Milwaukee, Wis.—Tackle Blocks.
Stuebner, G. L., Iron Works, 166 3d St., Long Island City, N. Y.—Trolleys, Tramways, etc.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.—Mine Cars, Cages, etc.
Swett, A. L., Iron Works, Medina, N. Y.—Screw Jacks.
Syracuse Chilled Plow Co., Syracuse, N. Y.—Trucks.
Tamaqua Mfg. Co., Tamaqua, Pa.—Cars, Ore Washers.
Tate, Jones & Co., Empire Bldg., Pittsburg, Pa.—Belt Conveyors.
Taylor & Co., 415 Driggs Ave., Brooklyn, N. Y.—Screw Jacks.
Taylor Iron & Steel Co., High Bridge, N. J.—Buckets, Chains, Elevators.
Taylor, S. G., & Son, 98 Indiana St., Chicago, Ill.—Chains.
Templeton, Kenly & Co., Ltd., The Rookery, Chicago, Ill.—Track Jacks.
Thomas Elevator Co., 138 Washington St., Chicago, Ill.—Hod Elevators.
Thomas & Buckley, Hod Elevator Co., 317 W. 64th St., New York.—Hod Elevators.
Thompson & Boyle Co., Los Angeles, Cal.—Buckets, Quartz Mills.
Tod, William, Co., Youngstown, O.—Hydraulic Cranes.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.—Trucks.
Treadwell, M. H., & Co., 95 Liberty St., New York.—Cars.
Trenton Iron Co., Trenton, N. J.—Blocks, Wire Rope.
Trimont Mfg. Co., Roxbury, Mass.—Miners' Tools.
Triumph Ice Machine Co., 610 Baymiller St., Cincinnati, O.—Cranes.
Truax Mfg. Co., Denver, Col.—Mine Cars.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.—Trucks.
Turl's, John, Sons, 534 W. 28th St., New York.—Cranes, Trolleys, etc.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.—Trucks. *See adv. page 52.*
Union Hardware Co., Torrington, Conn.—Tackle Blocks.
Union Iron Works, Hoboken, N. J.—Buckets.
Union Iron Works, Inc., Minneapolis, Minn.—Trucks.
Union Iron Works, San Francisco, Cal.—Ore Feeders and Concentrators, Stamp Mills, etc.
Union Iron Works, Inc., Spokane, Wash.—Cages, Mills.
Union Iron Works Co., Selma, Ala.—Trucks.
Union Machine & Boiler Co., 108 River St., Cleveland, O.—Derricks.
United Engineering & Foundry Co., Pittsburg, Pa.—Cranes.
United States Chain Co., Greenfield, Ind.—Coil Chains.
Van Emon Engineering Co., 52 National St., San Francisco, Cal.—Elevators.
Verona Tool Works, Murtland Bldg., Pittsburg, Pa.—Track Jacks.
Vulcan Foundry & Machine Co., New Castle, Pa.—Cranes.
Vulcan Iron Works, 59 Milwaukee Ave., Chicago, Ill.—Derricks.
Vulcan Iron Works, Toledo, O.—Derricks.
Vulcan Iron Works, Wilkesbarre, Pa.—Cranes, Derricks, etc.
Wagner-Palmros Mfg. Co., Fairmont, W. Va.—Hoists, Cars, Mine Tipples.
Walton, P. M., 1023 Germantown Ave., Philadelphia, Pa.—Traveling Cranes.

Warner Elevator Mfg. Co., Spring Grove Ave., Cincinnati, O.—Elevators.
Warsaw Elevator Co., Warsaw, N. Y.—Elevators, Hoists, Trucks.
Warwood Tool Co., Wheeling, W. Va.—Miners' Tools.
Waterbury & Co., Inc., 69 South St., New York.—Wire Rope.
Watson-Stillman Co., 46 Dey St., New York.—Cranes, Jacks. *See adv. page 41.*
Watt Mining Car Wheel Co., Barnesville, O.—Mine Cars.
Weber Gas and Gasoline Engine Co., Kansas City, Mo.—Mine Cars.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.—Elevators, Conveyors.
Weimer Machine Works Co., Lebanon, Pa.—Trucks, Cars.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.—Conveyors, Elevator Buckets, etc.
Wellington Machine Co., Wellington, O.—Trucks, Cars.
Wellman-Seaver-Morgan Co., Cleveland, O.—Charging Cars, Cranes, Hoists.
Wells Bros., & Co., Greenfield, Mass.—Miners' Tools.
Westbrook, J. B., Foundry & Machine Co., Danville, Va.—Trucks.
West End Rolling Mill Co., Lebanon, Pa.—Chains.
Wetherill Separating Co., 68 Broad St., New York.—Ore Separators.
Wharton, Wm., Jr., & Co., 25th St. & Washington Ave., Philadelphia, Pa.—Portable Tracks.
Whitcomb Bros., Barre, Vt.—Cranes, Derricks.
Whitehead & Kales, Randolph & Franklin Sts., Detroit, Mich.—Cranes, Trolleys and Tramways.
Whitehurst, R. W., Co., Norfolk, Va.—Trucks.
Whiting Foundry Equipment Co., Harvey, Ill.—Foundry Cranes, Hoists, etc.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.—Trucks.
Whittier Machine Co., South Boston, Mass.—Elevators.
Wickes Bros., Saginaw, Mich.—Pneumatic Hoists.
Wilcox, Crittenden & Co., Middletown, Conn.—Coil Chains.
Wilcox Mfg. Co., Aurora, Ill.—Trolleys and Tramways.
Williamsport Clutch & Pulley Co., Williamsport, Pa.—Elevator Boots and Buckets, Carriers, etc.
Williamsport Wire Rope Co., Williamsport, Pa.—Wire Rope.
Wood, Warren, Paterson, N. J.—Mining Drills.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.—Cranes.
Woodhouse, Samuel, 4 Stafford St., Cleveland, O.—Chains.
Wright Wire Co., Worcester, Mass.—Wire Rope.
Wyoming Shovel Works, Wyoming, Pa.—Miners' Tools.
Yale & Towne Mfg. Co., 9 Murray St., New York.—Chain Blocks, etc.
Youngstown Engineering Co., Youngstown, O.—Cranes.
Zering, H., Mfg. Co., 218 Charles St., Cincinnati, O.—Warehouse, etc., Trucks.

HOISTING AND CONVEYING MACHINERY.

1 **BLOCKS, CHAIN HOISTING.** In use on chain hoists.

Chisholm & Moore Mfg. Co., Lake near Kirtland St., Cleveland, O.
Dederick's, P. K., Sons, Albany, N. Y.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Harrington, Edwin, Son & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.
Harvey, H. H., 606 Atlantic Ave., Boston, Mass.
Hoshor-Platt Co., 120 Liberty St., New York.
Merriman Bros., 162 Commercial St., Boston, Mass.
Reading Crane & Hoist Works, Reading, Pa.
Stuebner, G. L., Iron Works, 166 Third St., Long Island City, N. Y.
Yale & Towne Mfg. Co., 9 Murray St., New York.

2 **Differential Chain.**

Boston & Lockport Block Co., 160 Commercial St., Boston.
Chisholm & Moore Mfg. Co., Lake near Kirtland St., Cleveland, O. *See adv. page 120.*
Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.

3 **Tackle.** Sheaves or pulleys mounted within a shell; used with ropes for hoisting.

Boston & Lockport Block Co., 160 Commercial St., Boston.
Byers, John F., Machine Co., Ravenna, O.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Cleveland Block Co., 163 River St., Cleveland, O.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Dubuar, J. A., Mfg. Co., Northville, Mich.
Eureka Tackle Block Co., 442 E. Front St., Cincinnati, O.
Hunt, C. W., Co., 45 Broadway, New York.
Lane Bros., Co., Poughkeepsie, N. Y.
Leschen, A., & Sons Rope Co., 920 N. 1st St., St. Louis, Mo.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
McMillan's, W. H., Sons, 153 South St., New York.
Macomber & Whyte Rope Co., 19-21 S. Canal St., Chicago, Ill.
Merriman Bros., 162 Commercial St., Boston, Mass.
Mundy, J. S., 22 Prospect St., Newark, N. J.
National Fulton Brass Mfg. Co., Detroit, Mich.
Reading Crane & Hoist Works, Reading, Pa.
Stowell Mfg. & Foundry Co., South Milwaukee, Wis.
Stuebner, G. L., Iron Works, 166 3d St., Long Island City, New York.
Trenton Iron Co., Trenton, N. J.
Union Hardware Co., Torrington, Conn.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.

4 **BOOTS, ELEVATOR.** Receptacles for the spout or conduit of endless belt elevators.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.
Borden & Selleck Co., 48 Lake St., Chicago, Ill.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Caldwell, H. W., & Son, Co., Western Ave. & 17th St., Chicago.
Case Mfg. Co., Columbus, O.
Chain Belt Co., 766 Park St., Milwaukee, Wis.
Dodge Mfg. Co., Mishawaka, Ind.
Grotenrath, Fred., 111 Water St., Milwaukee, Wis.
Harvey, H. H., 606 Atlantic Ave., Boston, Mass.
Jeffrey Mfg. Co., Columbus, O. *See adv. page 122.*
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Marseilles Mfg. Co., Marseilles, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.

5 **BUCKETS, CLAM SHELL.** Dredge scoops shaped somewhat like a clam shell.

Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Exeter Machine Works, Pittston, Pa.
McMyler Mfg. Co., 119 Columbus St., Cleveland, O.
Macbeth Iron Co., Cleveland, O.
Obenberger, J. G., Co., 123 Barclay St., Milwaukee, Wis.
Smith, Theodore, & Sons Co., Foot of Essex St., Jersey City, N. J.
Wellman-Seaver-Morgan Co., Cleveland, O.

6 **Coal and Ore.** For hoisting in mines.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Chain Belt Co., 766 Park St., Milwaukee, Wis.
Clark, W. J., Co., Salem, O.
Davis, F. M., Iron Works Co., 8th & Larimer Sts., Denver, Col.
Denver Engineering Works Co., Blake & 30th Sts., Denver, Col.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Haiss, George, Mfg. Co., 141st St. & Rider Ave., New York.
McMyler Mfg. Co., 119 Columbus St., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O. *See adv. page 122.*
Obenberger, J. G., & Co., 123 Barclay St., Milwaukee, Wis.
Phillips, Doup & Co., 56 Pearl St., Brooklyn, N. Y.
Power & Mining Machinery Co., 52 William St., New York.
Stuebner, G. L., Iron Works, 166 3d St., Long Island City, N. Y.
Thompson & Boyle Co., Los Angeles, Cal.
Union Iron Works, Hoboken, N. J.
Vulcan Iron Works, Wilkesbarre, Pa.

7 **Dredging and Excavating.** In use on steam shovels.

Hayward Co., 97 Cedar St., New York.
Jeffrey Mfg. Co., Columbus, O.
Power & Mining Machinery Co., 52 William St., New York.
Smith, Theodore, & Sons Co., Foot of Essex St., Jersey City, N. J.
Union Iron Works, Hoboken, N. J.

BUCKETS, continued

8 **Elevator.** Receptacles or buckets for elevators of the endless belt or chain variety.

Avery Stamping Co., Cleveland, O.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland, O.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Caldwell, H. W., & Son Co., Western Ave. & 17th St., Chicago.
Carlin's, Thomas, Sons, Co., Allegheny, Pa.
Case Mfg. Co., Columbus, O.
Chain Belt Co., 766 Park St., Milwaukee, Wis.
Clark, W. J., Co., Salem, O.
Cleveland Elevator Bucket Co., 225 St. Clair St., Cleveland, O.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Flory, S., Mfg. Co., Bangor, Pa.
Greenwald, I. & E., Co., 720 E. Pearl St., Cincinnati, O.
Grotenrath, Fred., 111 W. Water St., Milwaukee, Wis.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Hoshor-Platt Co., 120 Liberty St., New York.
Hunt, C. W., Co., 45 Broadway, New York.
Illinois Malleable Iron Co., 30 W. Monroe St., Chicago, Ill.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Marseilles Mfg. Co., Marseilles, Ill.
Mey Chain Belt Engineering Works, 114 Perry St., Buffalo.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Nordyke & Marmon Co., Indianapolis, Ind.
Power & Mining Machinery Co., 52 William St., New York.
Stuebner, G. L., Iron Works, 166 3d St., Long Island City, N. Y.
Taylor Iron & Steel Co., High Bridge, N. J.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.
Williamsport Clutch & Pulley Co., Williamsport, Pa.

9 **CABLE RAILWAYS.**

Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland, O.
Dodge Coal Storage Co., Nicetown, Philadelphia, Pa.
Hoshor-Platt Co., 120 Liberty St., New York.
Hunt, C. W., Co., 45 Broadway, New York.

10 **CABLEWAYS, SUSPENSION.** Used in quarries, etc.

Broderick & Bascom Rope Co., 809 N. Main St., St. Louis, Mo.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland, O.
Flory, S., Mfg. Co., Bangor, Pa.
Leschen, A., & Sons Rope Co., 920 N. 1st St., St. Louis, Mo.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Macomber & Whyte Rope Co., 19-21 S. Canal St., Chicago, Ill.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Roebling, John A., Sons, Co., 117 Liberty St., New York.

11 **CARRIERS AND CARRIAGES.** For conveying automatically.

Flory, S., Mfg. Co., Bangor, Pa.
Hoshor-Platt Co., 120 Liberty St., New York.
Hunt, C. W., Co., 45 Broadway, New York.
Jeffrey Mfg. Co., Columbus, O. *See adv. page 122.*
Lidgerwood Mfg. Co., 96 Liberty St., New York.

CARRIERS AND CARRIAGES, continued

Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Robins Conveying Belt Co., Park Row Bldg., New York.
Turl's, John, Sons, 534 W. 28th St., New York.
Williamsport Clutch & Pulley Co., Williamsport, Pa.
Yale & Towne Mfg. Co., 9 Murray St., New York.

12 CHAINS, CABLE AND MARINE.

Bradlee & Co., 1621 Beach Ave., Philadelphia, Pa.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Carr, Joseph B., Co., Troy, N. Y.
Chillcott-Evans Chain Co., 652 Preble Ave., Allegheny, Pa.
Columbus Chain Co., Columbus, O.
Federal Mfg. Co., American Trust Bldg., Cleveland, O.
Hayden-Corbett Chain Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Monongahela Iron & Steel Co., Hope Church, Pa.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.

13 Coil.

Bradlee & Co., 1621 Beach Ave., Philadelphia, Pa.
Bridgeport Chain Co., Bridgeport, Conn.
Columbus Chain Co., Columbus, O.
Greystone Mfg. Co., Greystone, Conn.
Hayden-Corbett Chain Co., Columbus, O.
Indiana Chain Works, Jeffersonville, Ind.
Jones & Laughlin Steel Co., Pittsburg, Pa.
McCoy-Linn Iron Co., Milesburg, Pa.
McKay, Jas., & Co., 29th St. & Liberty Ave., Pittsburg, Pa.
New Castle Forge & Bolt Co., New Castle, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.
Starr, W. C., & Son, Richmond, Ind.
Taylor, S. G., & Son, Inc., 98 Indiana St., Chicago, Ill.
United States Chain Co., Greenfield, Ind.
West End Rolling Mill Co., Lebanon, Pa.
Wilcox, Crittenden & Co., Middletown, Conn.
Woodhouse, Samuel, 4 Stafford St., Cleveland, O.

14 Crane.

Bradlee & Co., 1621 Beach Ave., Philadelphia, Pa.
Hoopes & Townsend Co., 1330 Buttonwood St., Philadelphia.
Carr, Joseph B., Co., Troy, N. Y.
Chillcott-Evans Chain Co., 652 Preble Ave., Allegheny, Pa.
Columbus Chain Co., Columbus, O.
Hayden-Corbett Chain Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
McKay, Jas., & Co., 29th St. & Liberty Ave., Pittsburg, Pa.
New Castle Forge & Bolt Co., New Castle, Pa.
Newhall Chain, Forge & Iron Co., 15 Murray St., New York.
Robinson & Fosbrook, Fieldsboro, N. J.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.
Starr, W. C., & Son, Richmond, Ind.
Taylor, S. G., & Son, Inc., 98 Indiana St., Chicago, Ill.
West End Rolling Mill Co., Lebanon, Pa.
Woodhouse, Samuel, 4 Stafford St., Cleveland, O.

CHAINS, continued

15 **Differential Pulley Block.**

Columbus Chain Co., Columbus, O.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.
Taylor, S. G., & Son, Inc., 98 Indiana St., Chicago, Ill.
West End Rolling Mill Co., Lebanon, Pa.
Woodhouse, Samuel, 4 Stafford St., Cleveland, O.

16 **Dredge.**

Bradlee & Co., 1621 Beach Ave., Philadelphia, Pa.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Carr, Jos. B., Co., Troy, N. Y.
Chillcott-Evans Chain Co., 652 Preble St., Allegheny, Pa.
Columbus Chain Co., Columbus, O.
Haskell, Wm. H., Mfg. Co., Pawtucket, R. I.
Hayden-Corbett Chain Co., Columbus, O.
Hoopes & Townsend Co., 1330 Buttonwood St., Philadelphia.
Jeffrey Mfg. Co., Columbus, O.
Monongahela Iron & Steel Co., Hope Church, Pa.
New Castle Forge & Bolt Co., New Castle, Pa.
Newhall Chain, Forge & Iron Co., 15 Murray St., New York.
Robinson & Fosbrook Fieldsboro, N. J.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.
Taylor, S. G., & Son, Inc., 98 Indiana St., Chicago, Ill.
West End Rolling Mill Co., Lebanon, Pa.
Woodhouse, Samuel, 4 Stafford St., Cleveland, O.

17 **Hoist.**

Federal Mfg. Co., American Trust Bldg., Cleveland, O.
Newhall Chain, Forge & Iron Co., 15 Murray St., New York.

18 **Log.**

Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Carr, Joseph B., Co., Troy, N. Y.
Columbus Chain Co., Columbus, O.
Hayden-Corbett Chain Co., Columbus, O.
Hoopes & Townsend Co., 1330 Buttonwood St., Philadelphia.
Indiana Chain Works, Jeffersonville, Ind.
Jones & Laughlin Steel Co., Pittsburg, Pa.
McCoy-Linn Iron Co., Milesburg, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Robinson & Fosbrook, Fieldsboro, N. J.
Starr, W. C., & Son, Richmond, Ind.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.
Taylor, S. G., & Son, Inc., 98 Indiana St., Chicago, Ill.
West End Rolling Mill Co., Lebanon, Pa.

19 **Sprocket Wheel.**

Boston Gear Works, 152 Purchase St., Boston, Mass.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Chain Belt Co., 766 Park St., Milwaukee, Wis.
Columbus Chain Co., Columbus, O.
Ewart Mfg. Co., Chicago, Ill.
Federal Mfg. Co., American Trust Bldg., Cleveland, O.

CHAINS, SPROCKET WHEEL, continued

Hayden-Corbett Chain Co., Columbus, O.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Locke Steel Belt Co., Bridgeport, Conn.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Standard Chain Co., Frick Bldg., Pittsburg, Pa.
Taylor Iron & Steel Co., High Bridge, N. J.
West End Rolling Mill Co. & Chain Works, Lebanon, Pa.

20 **COAL AND ORE HANDLING MACHINERY.**

Bronder, G. A., 229 Broadway, New York.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Carlin's, Thomas, Sons, Co., Allegheny, Pa.
Dodge Coal Storage Co., Nicetown, Philadelphia, Pa.
Exeter Machine Works, Pittston, Pa.
Haiss, George, Mfg. Co., 141st St. & Rider Ave., New York.
Hunt, C. W., Co., 45 Broadway, New York.
Jeffrey Mfg. Co., Columbus, O.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
McMyler Mfg. Co., 119 Columbus St., Cleveland, O.
Mead, John A., & Co., 11 Broadway, New York.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Norman & Evans, Lockport, N. Y.
Robins Conveying Belt Co., Park Row Bldg., New York.
Wellman-Seaver-Morgan Co., Cleveland, O.

21 **CONVEYORS, APRON.** See 22, Belt Conveyors.

22 **Belt.** Which employ belting of cotton or rubber running from pulleys placed at intervals.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Bonnot Co., Canton, O.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Chain Belt Co., 766 Park St., Milwaukee, Wis.
Dodge Mfg. Co., Mishawaka, Ind.
Flory, S., Mfg. Co., Bangor, Pa.
Grotenrath, Fred., 111 W. Water St., Milwaukee, Wis.
Hunt, C. W., Co., 45 Broadway, New York.
Jeffrey Mfg. Co., Columbus, O.
Klein, Charles C., Marshall & Cambria Sts., Philadelphia, Pa.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Reilly & Fearon, 1145 N. 3d St., Philadelphia, Pa.
Robins Conveying Belt Co., Park Row Bldg., New York.
Steel Cable Engineering Co., 92 State St., Boston, Mass.
Tate, Jones & Co., Empire Bldg., Pittsburg, Pa.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.

23 **Cable.**

Garland, M., Co., Bay City, Mich.
Jeffrey Mfg. Co., Columbus, O. *See adv. page 122.*

CONVEYORS, CABLE, continued

Mey Chain Belting & Engineering Works, 114 Perry St., Buffalo, N. Y.

24 **Chain.**

Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Dodge Mfg. Co., Mishawaka, Ind.
Garland, M., Co., Bay City, Mich.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Mey Chain Belting & Engineering Works, 114 Perry St., Buffalo, N. Y.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.

25 **Link-Belt.**

Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Chain Belt Co., 766 Park St., Milwaukee, Wis.
Grotenrath, Fred., 111 W. Water St., Milwaukee, Wis.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Mey Chain Belting & Engineering Works, 114 Perry St., Buffalo, N. Y.

26 **Spiral or Screw.** Vertical chutes of spiral form.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Caldwell, H. W., & Son, 17th St. & Western Ave., Chicago, Ill.
Dodge Mfg. Co., Mishawaka, Ind.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Weller Mfg. Co., 118 North Ave., Chicago, Ill.

27 **CRANES, AIR.** See 36, Pneumatic Cranes.

28 **Cantilever.** Supported by bracket-like trusses.

Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland, O.
Northern Engineering Works, Detroit, Mich.

29 **Gantry.** Traveling cranes mounted on posts or legs for yard use.

Alliance Machine Co., Alliance, O.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Morgan Engineering Co., Alliance, O.
North Penn Iron Co., North Penn Junction, Philadelphia, Pa.
Northern Engineering Works, Detroit, Mich.
Russel Wheel & Foundry Co., Detroit, Mich.
Sellers, William, & Co., Inc., 1600 Hamilton St., Philadelphia.

30 **Hand.** Operated by hand.

Alliance Machine Co., Alliance, O.
Box, Alfred, Co., Front & Poplar Sts., Philadelphia, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.

CRANES, HAND, continued

Browning Engineering Co., Collinwood, O.
Byram & Co., Inc., 435 Guoin St., Detroit, Mich.
Case Mfg. Co., Columbus, O.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Garry Iron & Steel Co., Cleveland, O. *See adv. page 127.*
Lewis Foundry & Machine Co., 1001 Bingham St., Pittsburg.
Harrington, Edwin Son, & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.
Moyer, J. W., & Co., 1736 N. Howard St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Northern Engineering Works, Detroit, Mich.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Works, Reading, Pa.
Sellers, William, & Co., Inc., 1600 Hamilton St., Philadelphia.
Speidel, J. G., Reading, Pa.
Turl's, John, Sons, 534 W. 28th St., New York.
Whiting Foundry Equipment Co., Harvey, Ill.
Yale & Towne Mfg. Co., 9 Murray St., New York.

31 **Hydraulic.** Operated by hydraulic pressure.

Alliance Machine Co., Alliance, O.
Chambersburg Engineering Co., Chambersburg, Pa.
Craig, Ridgway & Son, Co., Coatesville, Pa.
Lewis Foundry & Machine Co., 1001 Bingham St., Pittsburg.
Mackintosh, Hemphill & Co., Pittsburg, Pa.
Morgan Construction Co., Worcester, Mass.
Morgan Engineering Co., Alliance, O.
Northern Engineering Works, Detroit, Mich.
Ridgway, Craig, & Son, Co., Coatesville, Pa.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philda.
Sellers, William, & Co., Inc., 1600 Hamilton St., Philadelphia.
Tod, William, Co., Youngstown, O.
United Engineering & Foundry Co., Pittsburg, Pa.
Watson-Stillman Co., 46 Dey St., New York.
Whiting Foundry Equipment Co., Harvey, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

32 **Jib.** Having a swinging boom.

Alliance Machine Co., Alliance, O.
Box, Alfred, Co., Front & Poplar Sts., Philadelphia, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Browning Engineering Co., Collinwood, O.
Byram & Co., Inc., 435 Guoin St., Detroit, Mich.
Case Mfg. Co., Columbus, O.
Cleveland Crane & Car Co., Wickliffe, O.
Contractors Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Harrington, Edwin, Son & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.
Hoisting & Conveying Machinery Co., 44 N. Elizabeth St., Chicago, Ill.
Industrial Works, Bay City, Mich.
Jones & Laughlin Steel Co., Pittsburg, Pa.
Lewis Foundry & Machine Co., 1001 Bingham St., Pittsburg.
McMyler Mfg. Co., 119 Columbus St., Cleveland, O.
Maris Bros., 56th St. & Gray Ave., Philadelphia, Pa.
Morgan Construction Co., Worcester, Mass.

CRANES, JIB, continued

Morgan Engineering Co., Alliance, O.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Northern Engineering Works, Detroit, Mich.
Pedrick & Ayer Co., Plainfield, N. J.
Ridgway, Craig, & Son, Co., Coatesville, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Turl's, John, Sons, 534 W. 28th St., New York.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Whitehead & Kales Iron Works, Randolph & Franklin Sts., Detroit, Mich.
Whiting Foundry Equipment Co., Harvey, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

33 **Locomotive.**

American Hoist & Derrick Co., St. Paul, Minn.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Bullock Electric Mfg. Co., Cincinnati, O.
Browning Engineering Co., Collinwood, O.
Case Mfg. Co., Columbus, O.
Cleveland Crane & Car Co., Wickliffe, O.
Dodge Coal Storage Co., Nicetown, Philadelphia, Pa.
Industrial Works, Bay City, Mich.
Morgan Engineering Co., Alliance, O.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Northern Engineering Works, Detroit, Mich.
North Penn Iron Co., North Penn Junction, Philadelphia, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

34 ELECTRIC.

Alliance Machine Co., Alliance, O.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Cleveland Crane & Car Co., Wickliffe, O.
Industrial Works, Bay City, Mich.
Northern Engineering Works, Detroit, Mich.
North Penn Iron Co., North Penn Junction, Philadelphia, Pa.

35 **Pillar.** In which the movable arm is fastened to a pillar or post.

Alliance Machine Co., Alliance, O.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Industrial Works, Bay City, Mich.
Morgan Engineering Co., Alliance, O.
Northern Engineering Works, Detroit, Mich.
Vulcan Foundry & Machine Co., New Castle, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

36 **Pneumatic.** Operated by compressed air.

Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Curtis & Co. Mfg. Co., 2201 Washington Ave., St. Louis, Mo.
Garry Iron & Steel Co., Cleveland, O. *See adv. page 127.*
General Pneumatic Tool Co., Montour Falls, N. Y.
Northern Engineering Works, Detroit, Mich.
Pedrick & Ayer Co., Plainfield, N. J.

CRANES, PNEUMATIC, continued

Ridgway, Craig, & Son Co., Coatesville, Pa.
Triumph Ice Machine Co., 610 Baymiller St., Cincinnati, O.
Whiting Foundry Equipment Co., Harvey, Ill.

37 **Portable.** Mounted on wheels for easy transportation in machine shops, etc.

Franklin Portable Crane & Hoist Co., Franklin, Pa.

38 **Swing.** See 32, Jib Cranes.
Alliance Machine Co., Alliance, O.
Chambersburg Engineering Co., Chambersburg, Pa.
Farrell Foundry & Machine Co., Ansonia, Conn.
Lincoln Iron Works, Rutland, Vt.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Ridgway, Craig, & Son Co., Coatesville, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Vulcan Iron Works, Wilkesbarre, Pa.

39 **Traveling.** Which run on trolleys usually placed overhead.

Alliance Machine Co., Alliance, O.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Boston Bridge Works, 47 Winter St., Boston, Mass.
Box, Alfred, Co., Front & Poplar Sts., Philadelphia, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Browning Engineering Co., Collinwood, O.
Byram & Co., Inc., 435 Guoin St., Detroit, Mich.
Case Mfg. Co., Columbus, O.
Chambersburg Engineering Co., Chambersburg, Pa.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Cleveland Crane & Car Co., Wickliffe, O.
Curtis & Co., Mfg. Co., 2201 Washington Ave., St. Louis, Mo.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
General Electric Co., Schenectady, N. Y.
Harrington, Edwin, Son & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.
Industrial Works, Bay City, Mich.
Johnston Foundry & Machine Co., Reading, Pa.
Lane Mfg. Co., Montpelier, Vt.
Mansfield Engineering Co., Mansfield, O.
Maris Bros., 56th St. & Gray Ave., Philadelphia, Pa.
Morgan Construction Co., Worcester, Mass.
Morgan Engineering Co., Alliance, O.
New Albany Mfg. Co., New Albany, Ind.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Northern Engineering Works, Detroit, Mich.
North Penn Iron Co., North Penn Junction, Philadelphia, Pa.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Works, Reading, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Shaw Electric Crane Co., Muskegon, Mich.
Shriver, T., & Co., 333 E. 56th St., New York.
Smith, Whitcomb & Cook Co., Barre, Vt.
Speidel, J. G., Reading, Pa.
Walton, P. M., 1023 Germantown Ave., Philadelphia, Pa.
Whitcomb Bros., Barre, Vt.

CRANES, TRAVELING, continued

Whitehead & Kales Iron Works, Randolph & Franklin Sts., Detroit, Mich.
Whiting Foundry Equipment Co., Harvey, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.
Youngstown Engineering Co., Youngstown, O.

40 ELECTRIC. Operated by electricity.

Alliance Machine Co., Alliance, O.
Box, Alfred, Co., Front & Poplar Sts., Philadelphia, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Browning Engineering Co., Collinwood, O.
Bullock Electric Mfg. Co., Cincinnati, O.
Case Mfg. Co., Columbus, O.
Cleveland Crane & Car Co., Wickliffe, O.
Dallett, Thos. H., & Co., York St. & Sedgley Ave., Philda.
General Electric Co., Schenectady, N. Y.
Industrial Works, Bay City, Mich.
Jacobs, Chas. C., Bridge & Iron Works, Amboy, Ill.
Lincoln Iron Works, Rutland, Vt.
Mansfield Engineering Co., Mansfield, O.
Morgan Engineering Co., Alliance, O.
New Albany Mfg. Co.. New Albany, Ind.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Niles-Bement-Pond Co., 136 Liberty St., New York.
North Penn Iron Co., North Penn Junction, Philadelphia, Pa.
Northern Engineering Works, Detroit, Mich.
Pawling & Harnischfeger, Milwaukee, Wis.
Rogers Iron Co., Springfield, O.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Shaw Electric Crane Co., Muskegon, Mich.
Shriver, T., & Co., 333 E. 56th St., New York.
Triumph Ice Machine Co., 610 Baymiller St., Cincinnati, O.
Wellman-Seaver-Morgan Co., Cleveland, O.
Whiting Foundry Equipment Co., Harvey, Ill.
Youngstown Engineering Co., Youngstown, O.

41 **Wrecking.** Mounted on a flat car and used on railroads.

American Car & Foundry Co., 706 Chestnut St., St. Louis, Mo.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Bucyrus Co., South Milwaukee, Wis.
Industrial Works, Bay City, Mich.
Marion Steam Shovel Co., Marion, O.
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.
Sheffield Car Co., Three Rivers, Mich.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.

42 **DERRICKS.** For hoisting and usually for swinging great weights.

American Hoist & Derrick Co., St. Paul, Minn.
Bacon, Earle C., 26 Cortlandt St., New York.
Broderick & Bascom Rope Co., 809 N. Main St., St. Louis, Mo.
Browning Engineering Co., Collinwood, O.
Brunner & Lay, 133 W. Polk St., Chicago, Ill.
Byers, John F., Machine Co., Ravenna, O.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Clark, Alexander, & Co., Quincy, Mass.

DERRICKS, continued

Contractors Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Cram, D. H., Powers St., Boston, Mass.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Dodge Coal Storage Co., Nicetown, Philadelphia, Pa.
Flory, S., Mfg. Co., Bangor, Pa.
General Electric Co., Schenectady, N. Y.
Harvey, H. H., 606 Atlantic Ave., Boston, Mass.
Hayward Co., 97 Cedar St., New York.
Hinds, Thomas, Malone, N. Y.
Hoisting & Conveying Machinery Co., 44 N. Elizabeth St., Chicago, Ill.
Hoshor-Platt Co., 120 Liberty St., New York.
Jacobs, Chas. C., Bridge & Iron Works, Amboy, Ill.
Lake Shore Engine Works, Marquette, Mich.
Leschen, A., & Sons Rope Co., 920 N. 1st St., St. Louis, Mo.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Lincoln Iron Works, Rutland, Vt.
Lord, Bowler & Co., 35 Center St., Cleveland, O.
McMyler Mfg. Co., 119 Columbus St., Cleveland, O.
Mine & Smelter Supply Co., Denver, Col.
Morgan Engineering Co., Alliance, O.
Mundy, J. S., 22 Prospect St., Newark, N. J.
National Hoist & Machine Co., 463 W. 22d St., Chicago, Ill.
New Albany Mfg. Co., New Albany, Ind.
Norman & Evans, Lockport, N. Y.
Patch, F. R., Mfg. Co., Rutland, Vt.
Pollard, Jas. G., 141 Raymond St., Brooklyn, N. Y.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.
Richmond, A. K., & Son, 511 E. 5th St., Boston, Mass.
St. Cloud Iron Works, St. Cloud, Minn.
Smith, Theodore, & Sons Co., Foot of Essex St., Jersey City, N. J.
Smith, Whitcomb & Cook Co., Barre, Vt.
Speidel, J. G., Reading, Pa.
Union Machine & Boiler Co., 108 River St., Cleveland, O.
Vulcan Iron Works, 59 Milwaukee Ave., Chicago, Ill.
Vulcan Iron Works, Toledo, O.
Vulcan Iron Works, Wilkesbarre, Pa.
Whitcomb Bros., Barre, Vt.
Whiting Foundry Equipment Co., Harvey, Ill.

43 **DRUMS, HOISTING.** Barrels or cylinders upon which cables are wound.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Hoist & Derrick Co., St. Paul, Minn.
Bacon, Earle C., 26 Cortlandt St., New York.
Byers, John F., Machine Co., Ravenna, O.
Contractor Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Crawford & McCrimmon Co., Brazil, Ind.
Dederick's, P. K., Sons, Albany, N. Y.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Eastern Machinery Co., New Haven, Conn.
Flory, S., Mfg. Co., Bangor, Pa.
Freeman, J. W., Joplin, Mo.
Hoshor-Platt Co., 120 Liberty St., New York.
Lambert Hoisting Engine Co., 115 Poinier St., Newark, N. J.

DRUMS, HOISTING, continued

Lidgerwood Mfg. Co., 96 Liberty St., New York.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Ottumwa Iron Works, Ottumwa, Ia.
Poole Engineering & Machine Co., Baltimore, Md.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.

44 ELEVATORS.

45 **Barrel and Package.** For raising materials in warehouses, mills, etc.

Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Buhl Malleable Co., Wight & Adair Sts., Detroit, Mich.
Exeter Machine Works, Pittston, Pa.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Mey Chain Belting & Engineering Works, 14 Perry St., Buffalo, N. Y.
Oram, John S., 160 Coe St., Cleveland, O.
Reedy, H. J., Co., Cincinnati, O.
Steel Cable Engineering Co., 92 State St., Boston, Mass.
Warsaw Elevator Co., Warsaw, N. Y.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.

46 **Bucket.** Of the endless chain variety, the conveying receptacles being buckets.

Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Gilford Bros., Hudson, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Power & Mining Machinery Co., 52 William St., New York.
Taylor Iron & Steel Co., High Bridge, N. J.

47 **Foundry.**

Haughton Elevator & Machine Co., Toledo, O.
Northern Engineering Works, Detroit, Mich.
Reedy, H. J., Co., Cincinnati, O.
Ridgway, Craig & Son, Coatesville, Pa.
Warsaw Elevator Co., Warsaw, N. Y.
Whiting Foundry Equipment Co., Harvey, Ill.

48 **Freight and Passenger.** For use in residences, public buildings, etc.

Albro-Clem Elevator Co., 7th St. & Glenwood Ave., Philda.
Barth Mfg. Co., Milwaukee, Wis.
Bates, James, Sons, Pratt & President Sts., Baltimore, Md.
Broedesser Elevator Mfg. Co., 512 Commerce St., Milwaukee, Wis.
Cahill & Hall Elevator Co., San Francisco, Cal.
Chickasaw Iron Works, 98 2d St., Memphis, Tenn.
Eaton & Prince Co., Chicago, Ill.
Edmonds, F. A., 144 Champlain St., Cleveland, O.
Faunt, Le Roy, & Co., Baltimore, Md.
Gardner Elevator Co., Detroit, Mich.
Grote Mfg. Co., Evansville, Ind.
Haughton Elevator & Machine Co., Toledo, O.
Hoffman, Chas. W., & Co., 309 W. 36th St., New York.
Holmes & Blanchard Co., 37 Washington St., N., Boston, Mass.
Howard Iron Works, Buffalo, N. Y.

ELEVATORS, FREIGHT AND PASSENGER, continued

Kieckhefer, A., Elevator Co., 1026 St. Paul Ave., Milwaukee, Wis.
Kimball Bros., Council Bluffs, Ia.
Kinkade & Liggett Co., Columbus, O.
Louisville Elevator Co., Louisville, Ky.
McLauthlin, Geo. T., Co., 120 Fulton St., Boston, Mass.
Maryland Foundry & Machine Co., Baltimore, Md.
Mason, Volney W., & Co., Providence, R. I.
Moline Elevator Co., Moline, Ill.
Moon Elevator Co., 8th & Mulanphy Sts., St. Louis, Mo.
Morse, Williams & Co., Inc., Philadelphia, Pa. *See adv. page 121.*
Murtaugh, James, 202 E. 42d St., New York.
National Elevator & Machine Co., Scranton, Pa.
Otis Elevator Co., Yonkers, N. Y.
Parkhurst Bros., & Co., 218 Kentucky Ave., Indianapolis, Ind.
Plunger Elevator Co., Worcester, Mass.
Portland Co., Inc., Portland, Me.
Reedy, D. V., & Co., Indianapolis, Ind.
Reedy Elevator Co., 407 W. 14th St., New York.
Reedy, H. J., Co., Cincinnati, O.
Reedy, J. W., Elevator Mfg. Co., Chicago, Ill.
Rhode Island Elevator & Machine Co., Providence, R. I.
Sedgwick Machine Works, Poughkeepsie, N. Y.
See, A. B., Electric Elevator Co., 220 Broadway, New York.
Springfield Elevator & Pump Co., Springfield, Mass.
Standard Plunger Elevator Co., 1 Broadway, New York.
Stokes & Parish Elevator Co., 30th & Chestnut Sts., Philda.
Storms Mfg. Co., Newark, N. J.
Van Emon Engineering Co., 52 National St., San Francisco, Cal.
Warner Elevator Mfg. Co., Spring Grove Ave., Cincinnati, O.
Warsaw Elevator Co., Warsaw, N. Y.
Whittier Machine Co., South Boston, Mass.

49 **Hod.** For use in buildings under construction.

Adams Bros., & Co., 355 31st St., Chicago, Ill.
Adrian Brick & Tile Machine Co., Adrian, Mich.
American Hoist & Derrick Co., St. Paul, Minn.
Anderson, Chas., 18 Lexington Ave., Brooklyn, N. Y.
Builders' Elevator Co., 22 Clinton St., Chicago, Ill.
Byers, John F., Machine Co., Ravenna, O.
Contractors Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Edelmeyer & Morgan Hod Elevator Co., 333 W. 49th St., New York.
Kieckhefer, A., Elevator Co., 1026 St. Paul Ave., Milwaukee, Wis.
Moline Elevator Co., Moline, Ill.
National Hoist & Machine Co., 463 W. 22d St., Chicago, Ill.
Thomas Elevator Co., 138 Washington St., Chicago, Ill.
Thomas & Buckley Hod Elevator Co., 317 W. 64th St., N. Y.

50 **Water.** See 46, Bucket Elevators.

51 **Escalators.** Inclined elevators or moving stairways.

Franklin Machine & Tool Co., Franklin, Pa.
Link-Belt Engineering Co., Nicetown, Philadelphia, Pa.

ESCALATORS, continued

Otis Elevator Co., Yonkers, N. Y.
Reno Inclined Elevator Co., 551 W. 35th St., New York.

52 **HOISTS, CHAIN.** In which a chain passing through a pulley block is used for hoisting.

Boston & Lockport Block Co., 160 Commercial St., Boston.
Box, Alfred, Co., Front & Poplar Sts., Philadelphia, Pa.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Chisholm & Moore Mfg. Co., Lake near Kirtland St., Cleveland, O. *See adv. page 120.*
Contractors Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Dake Engine Co., Grand Haven, Mich.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Dunn, Jas. P., 207 Dunham Ave., Cleveland, O.
Empire Engine & Motor Co., Orangeburg, N. Y.
Harrington, Edwin, Son, & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.
Lane Bros., Co., Poughkeepsie, N. Y.
McCoy, Jos. F., Co., 157 Chambers St., New York.
Mecklenberg Iron Works, Charlotte, N. C.
Moyer, J. W., & Co., 1736 N. Howard St., Philadelphia, Pa.
Ney Mfg. Co., Canton, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Olsen, Tinius, & Co., 500 N. 12th St., Philadelphia, Pa.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Works, Reading, Pa.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Speidel, J. G., Reading, Pa.
Stuebner, Geo. L., Iron Works, 166 Third St., Long Island City, N. Y.
Wagner-Palmros Mfg. Co., Fairmont, W. Va.

53 **Electric.** Operated by electricity.

American Hoist & Derrick Co., St. Paul, Minn.
Box, Alfred, Co., Front & Poplar Sts., Philadelphia, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Cleveland Crane & Car Co., Wickliffe, O.
Denver Engineering Works Co., Blake & 30th Sts., Denver, Col.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Elektron Mfg. Co., Springfield, Mass.
Flory, S., Mfg. Co., Bangor, Pa.
General Electric Co., Schenectady, N. Y.
Hoshor-Platt Co., 120 Liberty St., New York.
Hunt, C. W., Co., 45 Broadway, New York.
Lambert Hoisting Engine Co., 115 Poinier St., Newark, N. J.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Litchfield Foundry & Machine Co., Litchfield, Ill.
McMyler Mfg. Co., 119 Columbus St., Cleveland, O.
Mine & Smelter Supply Co., Denver, Col.
Northern Engineering Works, Detroit, Mich.
Pawling & Harnischfeger, Milwaukee, Wis.
Phoenix Electrical Mfg. Co., Mansfield, O.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.
Wellman-Seaver-Morgan Co., Cleveland, O.

54 **Grip.** For hand elevators.

Arthur Co., 188 Front St., New York.

HOISTS, continued

55 Hand.

Adrian Brick & Tile Machine Co., Adrian, Mich.
American Hoist & Derrick Co., St. Paul, Minn.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Browning Engineering Co., Collinwood, O.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Case Mfg. Co., Columbus, O.
Chisholm & Moore Mfg. Co., Lake near Kirtland St., Cleveland, O. *See adv. page 120.*
Contractors' Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Davis, F. M., Iron Works Co., 8th & Larimer Sts., Denver, Col.
Dederick's, P. K., Sons, Albany, N. Y.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Flory, S., Mfg. Co., Bangor, Pa.
Franklin Portable Crane & Hoist Co., Franklin, Pa.
Hassell Iron Works Co., Colorado Springs, Col.
Lambert Hoisting Engine Co., 715 Poinier St., Newark, N. J.
Lord, Bowler & Co., 35 Center St., Cleveland, O.
Mason, Volney W., & Co., Providence, R. I.
Mine & Smelter Supply Co., Denver, Col.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Ney Mfg. Co., Canton, O.
Sedgwick Machine Works, Poughkeepsie, N. Y.
Speidel, J. G., Reading, Pa.
Warsaw Elevator Co., Warsaw, N. Y.
Yale & Towne Mfg. Co., 9 Murray St., New York.

56 Hydraulic. Operated by hydraulic pressure.

Olsen, Tinius, 500 12th St., Philadelphia, Pa.
Pennsylvania Iron Works Co., 50th & Lancaster Ave., Philda.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

57 Pneumatic. Operated by compressed air

American Air Compressor Works, 26 Cortlandt St., New York.
Baird Machinery Co., Pittsburg, Pa.
Browning Engineering Co., Collinwood, O.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Chisholm & Moore Mfg. Co., Lake near Kirtland St., Cleveland, O. *See adv. page 120.*
Curtis & Co. Mfg. Co., 2201 Washington Ave., St. Louis, Mo.
Dake Engine Co., Grand Rapids, Mich.
Dodge Mfg. Co., Mishawaka, Ind.
Empire Engine & Motor Co., Orangeburg, N. Y.
Gardner Governor Co., Quincy, Ill.
General Pneumatic Tool Co., Montour Falls, N. Y.
Hanna Engineering Works, 820 Elston Ave., Chicago, Ill.
Knell Air Brake Co., Battle Creek, Mich.
Nason Mfg. Co., 71 Beekman St., New York.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Northern Engineering Works, Detroit, Mich.
Pedrick & Ayer Co., Plainfield, N. J.
Philadelphia Pneumatic Tool Co., 21st St. & Allegheny Ave., Philadelphia, Pa.
Pilling Air Engine Works, Bucyrus, O.
Pneumatic Engineering Co., 128 Broadway, New York.
Port Huron Air Tool Co., Port Huron, Mich.

HOISTS, PNEUMATIC, continued

Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Rand Drill Co., 128 Broadway, New York. *See adv. page 122.*
Ridgway, Craig, & Son Co., Coatesville, Pa.
Rix Compressed Air & Drill Co., 396 Mission St., San Francisco, Cal.
Standard Railway Equipment Co., Union Trust Bldg., St. Louis, Mo.
Whiting Foundry Equipment Co., Harvey, Ill.
Wickes Bros., Saginaw, Mich.

58 **Trolley.**

Chisholm & Moore Mfg. Co., Lake near Kirtland St., Cleveland, O. *See adv. page 120.*
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Northern Engineering Works, Detroit, Mich.
Speidel, J. G., Reading, Pa.

59 **JACKS.**

60 **Hydraulic.** For lifting heavy weights or exerting great force by fluid pressure from a hand pump connected with a large bore cylinder and a piston.

Anderson, W. H., & Sons, Inc., 44 Macomb St., Detroit, Mich.
Burroughs, Chas., Co., 141 Commerce St., Newark, N. J.
City Machine Co., Cleveland, O.
Dienelt & Eisenhardt, 1308 Howard St., Philadelphia, Pa.
Dudgeon, Richard, 24 Columbia St., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Henderer's, A. L., Sons, Wilmington, Del.
Joyce-Cridland Co., Wyandot & Railroad Sts., Dayton, O.
Justice, Philip S., & Co., 14 N. 5th St., Philadelphia, Pa.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
McCoy, Jos. F., Co., 157 Chambers St., New York.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*

61 **Lifting.** Operated by a lever or a screw.

Anderson, W. H., & Sons, Inc., 44 Macomb St., Detroit, Mich.
Barth Mfg. Co., Milwaukee, Wis.
Boyer & Radford, Dayton, O.
Bray Mfg. Co., Newark, N. J.
Contractors' Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Duff Mfg. Co., 405 Marion Ave., Allegheny, Pa.
Hagerstown Foundry Co., Hagerstown, Md.
Harvey, H. H., 606 Atlantic Ave., Boston, Mass.
Henderer's, A. L., Sons, Wilmington, Del.
Howell, R. R., & Co., Minneapolis, Minn.
Joyce-Cridland Co., Wyandot & Railroad Sts., Dayton, O.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Klemm, E. R., 103 W. Monroe St., Chicago, Ill.
McCoy, Jos. F., Co., 157 Chambers St., New York.
Maynard, C. T., & Co., Fairhaven, Vt.
Newell, J. F., & Co., Gardiner, Me.
New London Vise Works, 20 Division St., New London, Conn.
Norton, A. O., 236 Congress St., Boston, Mass.
Pelky, W. H., Fair Haven, Vt.
Schwartz, M., & Son, Chillicothe, O.

JACKS, LIFTING, continued

Sheffer, B. F., Glen Rock, Pa.
Standard Machine Works, Newark, N. J.

62 **Pneumatic.** Operated by compressed air.

Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Garry Iron & Steel Co., Cleveland, O. *See adv. page 127.*

63 **Pumping.** For raising liquids.

Lazier Gas Engine Co., Buffalo, N. Y.
Myers, F. E., & Bro., Ashland, O.

64 **Ratchet.** Lifting jacks in which the screw is rotated by a lever and ratchet mechanism.

Belleville Pump & Skein Works, Belleville, Ill.
Boyer & Radford, Dayton, O.
Illinois Iron & Bolt Co., Carpentersville, Ill.
Joyce-Cridland Co., Wyandot & Railroad Sts., Dayton, O.
Justice, Philip S., & Co., 14 N. 5th St., Philadelphia, Pa.
Norton, A. O., 236 Congress St., Boston, Mass.

65 **Screw.** Hoisting or lifting jacks operated by a screw.

Baker Mfg. Co., Evansville, Wis.
Barber Mfg. Co., Ashtabula, O.
Barth Mfg. Co., Milwaukee, Wis.
Belleville Pump & Skein Works, Belleville, Ill.
Boyer & Radford, Dayton, O.
Brown Bros. Mfg. Co., W. Jackson Blvd. & Clinton St., Chicago, Ill.
Chapman Jack Co., Cleveland, O.
Contractors' Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Dudgeon, Richard, 24 Columbia St., New York.
Duff Mfg. Co., 405 Marion Ave., Allegheny, Pa.
Goulds Mfg. Co., Seneca Falls, N. Y.
Harvey, H. H., 606 Atlantic Ave., Boston, Mass.
Howell, R. R., & Co., Minneapolis, Minn.
Illinois Iron & Bolt Co., Carpentersville, Ill.
Joyce-Cridland Co., Wyandot & Railroad Sts., Dayton, O.
Justice, Philip S., & Co., 14 N. 5th St., Philadelphia, Pa.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Kinsley Iron & Machine Co., Canton, Mass.
Le Count, Wm. G., South Norwalk, Conn.
Lovejoy, T. H., 90 Ohio St., Chicago, Ill.
McCoy, Jos. F., Co., 157 Chambers St., New York.
McLagon Foundry Co., New Haven, Conn.
Millers Falls Co., Millers Falls, Mass.
Munnsville Plow Co., Munnsville, N. Y.
Newell, J. F., & Co., Gardiner, Me.
New London Vise Works, 20 Division St., New London, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Norton, A. O., 236 Congress St., Boston, Mass.
Peck, Stow & Wilcox Co., Southington, Conn.
Pedrick & Ayer Co., Plainfield, N. J.
Racine Steel & Iron Mfg. Co., Racine, Wis.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philda.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Swett, A. L., Iron Works, Medina, N. Y.

JACKS, SCREW, continued

Taylor & Co., 415 Driggs Ave., Brooklyn, N. Y.
Watson-Stillman Co., 46 Dey St., New York.

66 **Track.** For use on railroads.

Barth Mfg. Co., Milwaukee, Wis.
Belleville Pump & Skein Works, Belleville, Ill.
Boyer & Radford, Dayton, O.
Crane, A. M., & Co., The Rookery, Chicago, Ill.
Duff Mfg. Co., 405 Marion Ave., Allegheny, Pa.
Elkhart Frog & Crossing Works, Elkhart, Ind.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Henderer's, A. L., Sons, Wilmington, Del.
Illinois Iron & Bolt Co., Carpentersville, Ill.
Joyce-Cridland Co., Wyandot & Railroad Sts., Dayton, O.
Justice, Philip S., & Co., 14 N. 5th St., Philadelphia, Pa.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Morden Frog & Crossing Works, The Rookery, Chicago, Ill.
Norton, A. O., 236 Congress St., Boston, Mass.
Pettibone, Mulliken & Co., Inc., 204 Dearborn St., Chicago, Ill.
Pittsburg Tool & Drop Forge Co., Arrott Bldg., Pittsburg, Pa.
Templeton, Kenly & Co., Ltd., The Rookery, Chicago, Ill.
Verona Tool Works, Murtland Bldg., Pittsburg, Pa.

67 **Wagon.**

Barber Mfg. Co., Ashtabula, O.
Barth Mfg. Co., Milwaukee, Wis.
Boston & Lockport Block Co., 160 Commercial St., Boston.
Buckeye Mfg. Co., Anderson, Ind.
Covert Mfg. Co., Watervliet, N. Y.
Eureka Mower Co., Utica, N. Y.
Lane Bros., Co., Poughkeepsie, N. Y.

68 **SHACKLE HOOKS.** For joining chains.
Keystone Drop Forge Works, Chester, Pa.

69 **TROLLEYS AND TRAMWAYS.**

Atlas Bolt & Screw Co., Cleveland, O.
Bacon, Earle O., 26 Cortlandt St., New York.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Case Mfg. Co., Columbus, O.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Chisholm & Moore Mfg. Co., Lake near Kirtland St., Cleveland, O. *See adv. page 120.*
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Dodge Coal Storage Co., Nicetown, Philadelphia, Pa.
Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Garry Iron & Steel Co., Cleveland, O. *See adv. page 127.*
General Electric Co., Schenectady, N. Y.
Hoshor-Platt Co., 120 Liberty St., New York.
Hallidie-Painter Tramway Co., Fremont & Mission Sts., San Francisco, Cal.
Harrington, Edwin, Son, & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.
Hersey Mfg. Co., South Boston, Mass.

TROLLEYS AND TRAMWAYS, continued

Leschen, A., & Sons Rope Co., 920 N. 1st St., St. Louis, Mo.
McCabe Hanger Mfg. Co., 425 W. 25th St., New York.
Macomber & Whyte Rope Co., 19-21 S. Canal St., Chicago, Ill.
Maris Bros., 56th St. & Gray Ave., Philadelphia, Pa.
Moyer, J. W., & Co., 1736 N. Howard St., Philadelphia, Pa.
Mundy, J. S., 22 Prospect St., Newark, N. J.
North Alabama Engineering Co., New Decatur, Ala.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Reading Crane & Hoist Works, Reading, Pa.
Speidel, J. G., Reading, Pa.
Stuebner, G. L., Iron Works, 166 Third St., Long Island City, N. Y.
Turl's, John, Sons, 534 W. 28th St., New York.
Whitehead & Kales Iron Works, Randolph & Franklin Sts., Detroit, Mich.
Whiting Foundry Equipment Co., Harvey, Ill.
Wilcox Mfg. Co., Aurora, Ill.
Yale & Towne Mfg. Co., 9 Murray St., New York.

70 TRUCKS.

71 Baggage. For handling baggage at railway stations.

Ames Plow Co., Quincy Hall, Boston, Mass.
Boston & Lockport Block Co., 160 Commercial St., Boston.
Buffalo Scale Co., Buffalo, N. Y.
Clark, George P., Co., Windsor Locks, Conn.
Fairbanks Co., Broome & Elm Sts., New York.
Farquhar, A. B., Co., Ltd., York, Pa.
Howe Scale Co., Rutland, Vt.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Lansing Wheelbarrow Co., Lansing, Mich.
Nutting Truck Co., Faribault, Minn.
Phillips, Doup & Co., 56 Pearl St., Brooklyn, N. Y.
Warsaw Elevator Co., Warsaw, N. Y.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.

72 Brick. For use in clay working plants.

American Clay Working Machinery Co., Bucyrus, O.
Atlas Bolt & Screw Co., Cleveland, O.
Bayley, Wm., & Sons Co., 732 Greenbush St., Milwaukee, Wis.
Davis-Price Foundry & Machine Co., New Cumberland, W. Va.
Eastern Machinery Co., New Haven, Conn.
Fernholtz Brick Machinery Co., Boyle & Old Manchester Aves., St. Louis, Mo.
Martin, Henry, Brick Machinery Mfg. Co., Lancaster, Pa.
Michigan Brick & Tile Machine Co., Morenci, Mich.
Potts, C., & A., Co., Indianapolis, Ind.
Raymond, C. W., Co., Dayton, O.
Scott's Patent Brick Car Co., Knoxville, Tenn.
Standard Dry Kiln Co., Indianapolis, Ind.
Steele, J. C., & Son, Statesville, N. C.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*
Wellington Machine Co., Wellington, O.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.

73 Foundry.

Boston & Lockport Block Co., 160 Commercial St., Boston.

TRUCKS, FOUNDRY, continued

Jones & Laughlin Steel Co., Pittsburg, Pa.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Lansing Wheelbarrow Co., Lansing, Mich.
Northern Engineering Works, Detroit, Mich.
Paxson, J. W., Co., 1021 N. Delaware Ave., Philadelphia, Pa.
Warsaw Elevator Co., Warsaw, N. Y.
Weimer Machine Works Co., Lebanon, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

74 **Logging and Lumber.**

Atlas Bolt & Screw Co., Cleveland, O.
Bain Wagon Co., Kenosha, Wis.
Bayley, Wm., & Sons Co., 732 Greenbush St., Milwaukee, Wis.
Boston & Lockport Block Co., 160 Commercial St., Boston.
Butterworth & Lowe, Grand Rapids, Mich.
Chickasaw Iron Works, 98 2d St., Memphis, Tenn.
Comstock, Geo. S., Mechanicsburg, Pa.
Curtis & Co., Mfg. Co., 2201 Washington Ave., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Farmers' Handy Wagon Co., Saginaw, Mich.
Fish Bros. Wagon Co., Racine, Wis.
Georgia Car & Mfg. Co., Savannah, Ga.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Kramer Wagon Co., Oil City, Pa.
Lane Mfg. Co., Montpelier, Vt.
Lima Locomotive & Machine Co., Lima, O.
Link, E. M., Machinery Co., Erie, Pa.
Luedinghaus-Espenschied Wagon Co., 1713 N. Broadway, St. Louis, Mo.
Marshall Car Wheel & Foundry Co., Marshall, Tex
Mecklenburg Iron Works, Charlotte, N. C.
Michigan Wheelbarrow & Truck Co., Saginaw, Mich.
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.
North Alabama Engineering Co., New Decatur, Ala.
Peacock's Iron Works, Selma, Ala.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Russel Wheel & Foundry Co., Detroit, Mich.
Sheffield Car Co., Three Rivers, Mich.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Southern Engine & Boiler Works, Inc., Jackson, Tenn.
Standard Saw Mill Machinery Co., Erie, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Union Iron Works, Inc., Minneapolis, Minn.
Union Iron Works Co., Selma, Ala.

75 **Store, Warehouse and Factory.**

Armstrong, George F., 411 Cherry St., Philadelphia, Pa.
Atlas Bolt & Screw Co., Cleveland, O.
Belcher & Taylor Agl. Tool Co., Chicopee Falls, Mass.
Bogert & Carlough Co., Paterson, N. J.
Boston & Lockport Block Co., 160 Commercial St., Boston.
Buffalo Scale Co., Buffalo, N. Y.

TRUCKS, WAREHOUSE, continued

Clark, George P., Co., Windsor Locks, Conn.
Day, J. H., & Co., Cincinnati, O.
Defiance Box Co., Defiance, O.
Dietz, Fred., Co., 1102 Madison Ave., Indianapolis, Ind.
Fairbanks Co., Broome & Elm Sts., New York.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Farquhar, A. B., Co., Ltd., York, Pa.
Grand Rapids Hand Screw Co., Grand Rapids, Mich.
Howe Scale Co., Rutland, Vt.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Lansing Wheelbarrow Co., Lansing, Mich.
Leatheroid Mfg. Co., Kennebunk, Me.
McKinney Mfg. Co., Allegheny, Pa.
Messinger Mfg. Co., Tatamy, Pa.
Michigan Mfg. & Lumber Co., Holly, Mich.
Michigan Wheelbarrow & Truck Co., Saginaw, Mich.
Murray, D. J., Mfg. Co., Wausau, Wis.
Nutting Truck Co., Faribault, Minn.
Puffer-Hubbard Mfg. Co., Minneapolis, Minn.
Schriver, O. P., & Co., 208 Elm St., Cincinnati, O.
Sidney Steel Scraper Co., Sidney, O.
Slingsby, H. E., 156 West St., New York.
Smith, I. L., Evansville, Ind.
Spicer Mfg. Co., New Philadelphia, O.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
Warsaw Elevator Co., Warsaw, N. Y.
Westbrook, J. B., Foundry & Machine Co., Danville, Va.
Whitehurst, R. W., Co., Norfolk, Va.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.
Zering, H., Mfg. Co., 218 Charles St., Cincinnati, O.

76 **Wire Mill.** For conveying rods after they have been treated in the cleaning room, etc.

Atlas Bolt & Screw Co., Cleveland, O.
Bates Machine Co., Joliet, Ill.
Fairbanks Co., Broome & Elm Sts., New York.
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*

77 **WINCHES AND WINDLASSES.** Horizontal drums for winding or for hoisting by winding.

Acme Road Machinery Co., Frankfort, N. Y.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Hoist & Derrick Co., St. Paul, Minn.
American Ship Windlass Co., Providence, R. I.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Brown Hoisting Machinery Co., 1345 St. Clair St., Cleveland
Carlin's, Thos., Sons, Co., Allegheny, Pa.
Chase Machine Co., 111 Elm St., Cleveland, O.
Contractors' Plant Mfg. Co., 127 Erie St., Buffalo, N. Y.
Dake Engine Co., Grand Haven, Mich.
Dobbie Foundry & Machine Co., Niagara Falls, N. Y.
Dodge Coal Storage Co., Nicetown, Philadelphia, Pa.

WINCHES AND WINDLASSES, continued

Eastern Machinery Co., New Haven, Conn.
Empire Engine & Motor Co., Orangeburg, N. Y.
Freeman, J. W., Joplin, Mo.
General Electric Co., Schenectady, N. Y.
Harrington, Edwin, Son, & Co., Inc., 1503 Pennsylvania Ave., Philadelphia, Pa.
Harvey, H. H., 606 Atlantic Ave., Boston, Mass.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.
Hyde Windlass Co., Bath, Me.
Klemm, E. R., 103 W. Monroe St., Chicago, Ill.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Marine Mfg. & Supply Co., 158 South St., New York.
Round, D., & Son, 2287 Broadway, Cleveland, O.
Russell, Albert, & Sons, Co., Newburyport, Mass.
Scaife Foundry & Machine Co., 28th & Smallman Sts., Pittsburg, Pa.
Yale & Towne Mfg. Co., 9 Murray St., New York.

78 **WIRE ROPE.** For use in cableways, etc.

American Steel & Wire Co., The Rookery, Chicago, Ill.
Broderick & Bascom Rope Co., 809 N. Main St., St. Louis, Mo.
Durable Wire Rope Co., 28 Atlantic Ave., Boston, Mass.
Hallidie-Painter Tramway Co., Fremont & Mission Sts., San Francisco, Cal.
Hammond Mfg. Co., Portland, Ore.
Hazard Mfg. Co., Wilkesbarre, Pa.
Leschen, A., & Sons Rope Co., 920 N. 1st St., St. Louis, Mo.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Macomber & Whyte Rope Co., 19-21 S. Canal St., Chicago, Ill.
Milholland, J. & B., Co., 718 5th Ave., Pittsburg, Pa.
Mine & Smelter Supply Co., Denver, Col.
National Steel & Wire Co., New Haven, Conn.
Roebling, John A., Sons, Co., 117 Liberty St., New York.
Trenton Iron Co., Trenton, N. J.
Waterbury & Co., Inc., 69 South St., New York.
Williamsport Wire Rope Co., Williamsport, Pa.
Wright Wire Co., Worcester, Mass.

---

79 # INDUSTRIAL RAILWAYS.

80 **CARS.**

81 **Billet.** For carrying billets and blooms in rolling mills.

American Car & Foundry Co., 706 Chestnut St., St. Louis, Mo.
Atlas Bolt & Screw Co., Cleveland, O.
Byram & Co., Inc., 435 Guoin St., Detroit, Mich.
Carlin, W. J., Co., 25th St. & A. V. Ry., Pittsburg, Pa.
Cleveland Crane & Car Co., Wickliffe, O.
Hunt, C. W., Co., 45 Broadway, New York.

CARS, BILLET, continued

Jackson Mfg. Co., Harrisburg, Pa.
Northern Engineering Works, Detroit, Mich.
Sheffield Car Co., Three Rivers, Mich.
Whiting Foundry Equipment Co., Harvey, Ill.

82 **Brick and Clay.**

American Car & Foundry Co., 706 Chestnut St., St. Louis, Mo.
American Clay Working Machinery Co., Bucyrus, O.
Atlas Bolt & Screw Co., Cleveland, O.
Bonnot Co., Canton, O.
Cleveland Crane & Car Co., Wickliffe, O.
Eastern Machinery Co., New Haven, Conn.
Erie Car Works, Erie, Pa.
Freese, E. M., & Co., Galion, O.
Georgia Car & Mfg. Co., Savannah, Ga.
Hathorn Foundry & Machine Co., Mason City, Ia.
Horton Mfg. Co., Painesville, O.
Hoshor-Platt Co., 120 Liberty St., New York.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Lehigh Car Wheel & Axle Works, Catasauqua, Pa.
Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.
Ohio Ceramic Engineering Co., 50 Fall St., Cleveland, O.
Peacock's Iron Works, Selma, Ala.
Phillips, Doup & Co., 56 Pearl St., Brooklyn, N. Y.
Raymond, C. W., & Co., Dayton, O.
Scott's Patent Brick Car Co., Knoxville, Tenn.
Sheffield Car Co., Three Rivers, Mich.
Standard Dry Kiln Co., Indianapolis, Ind.
Steele, J. C., & Son, Statesville, N. C.
Stevenson Co., Wellsville, O.
Treadwell, M. H., & Co., 95 Liberty St., New York.
Wellington Machine Co., Wellington, O.

83 **Charging.** For conveying coal, ore, etc., to furnaces.

Atlas Bolt & Screw Co., Cleveland, O.
Hunt, C. W., Co., 45 Broadway, New York.
Power & Mining Machinery Co., 52 William St., New York.
Treadwell, M. H., & Co., 95 Liberty St., New York.

84 **Core Oven.** For holding cores while being baked in the ovens.

Atlas Bolt & Screw Co., Cleveland, O.
Byram & Co., Inc., 435 Guoin St., Detroit, Mich.
Cleveland Crane & Car Co., Wickliffe, O.
Hunt, C. W., Co., 45 Broadway, New York.
Jackson Mfg. Co., Harrisburg, Pa.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Niles Boiler Co., Niles, O.
Northern Engineering Works, Detroit, Mich.
Sheffield Car Co., Three Rivers, Mich.
Whiting Foundry Equipment Co., Harvey, Ill.

85 **Drier.** For use in lumber and brick kilns.

Atlas Bolt & Screw Co., Cleveland, O.
Bonnot Co., Canton, O.
Hoshor-Platt Co., 120 Liberty St., New York.

CARS, DRIER, continued

Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Means Foundry & Machine Co., Steubenville, O.
National Blower Works, Milwaukee, Wis.
North Alabama Engineering Co., New Decatur, Ala.
Ohio Ceramic Engineering Co., 50 Fall St., Cleveland, O.

86 **Foundry.** For carrying ladles, etc.

Atlas Bolt & Screw Co., Cleveland, O.
Byram & Co., Inc., 435 Guoin St., Detroit, Mich.
Carlin, W. J., Co., 25th St. & A. V. Ry., Pittsburg, Pa.
Hoshor-Platt Co., 120 Liberty St., New York.
Hunt, C. W., Co., 45 Broadway, New York.
Jackson Mfg. Co., Harrisburg, Pa.
Pollock, Wm. B., Co., Youngstown, O.
Russel Wheel & Foundry Co., Detroit, Mich.
Sheffield Car Co., Three Rivers, Mich.
Treadwell, M. H., & Co., 95 Liberty St., New York.
Weimer Machine Works Co., Lebanon, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

87 **Mine.**

Aetna Foundry & Machine Co., Springfield, Ill.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Car & Foundry Co., 706 Chestnut St., St. Louis, Mo.
American Engineering Specialty Co., 204 Dearborn St., Chicago, Ill.
Archer Iron Works, 34th Pl. & S. Western Ave. Blvd., Chicago, Ill.
Atlas Bolt & Screw Co., Cleveland, O.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Bacon, Earle C., 26 Cortlandt St., New York.
Bartlett, A. F., & Co., Inc., Saginaw, Mich.
Belleville Pump & Skein Works, Belleville, Ill.
Billmeyer & Small Co., York, Pa.
Bloomsburg Car Mfg. Co., Bloomsburg, Pa.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Caldwell Car & Mfg. Co., Caldwell, O.
Carlin, W. J., Co., 25th St. & A. V. Ry., Pittsburg, Pa.
Catawissa Car & Foundry Co., Catawissa, Pa.
Chattanooga Car & Foundry Co., Chattanooga, Tenn.
Cleveland Crane & Car Co., Wickliffe, O.
Colorado Iron Works Co., Denver, Col.
Connellsville Machine & Car Co., Connellsville, Pa.
Danville Foundry & Machine Co., Danville, Ill.
Davis, F. M., Iron Works Co., 8th & Larimer Sts., Denver, Col.
Denver Engineering Works, Blake & 30th Sts., Denver, Col.
Eagle Iron Works Co., Terre Haute, Ind.
Ellison, Wm., & Sons Mfg. Co., 1018 N. 6th St., St. Louis, Mo.
Exeter Machine Works, Pittston, Pa.
Fairbanks, Morse & Co., 172 Franklin St., Chicago, Ill.
Globe Iron Works, Inc., Stockton, Cal.
Harman & Hassert, Bloomsburg, Pa.
Haskell & Barker Car Co., Michigan City, Ind.
Heimann, A., & Bro., Massillon, O.
Helmick Foundry & Machine Co., Fairmont, W. Va.

CARS, MINE, continued

Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.
Hempfield Foundry Co., Ltd., Greensburg, Pa.
Herzler-Henninger Machine Works, Belleville, Ill.
Interstate Engineering Co., Williamson Bldg., Cleveland, O.
Jackson Mfg. Co., Harrisburg, Pa.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Kenney & Co., Scottdale, Pa.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Lansing Wheelbarrow Co., Lansing, Mich.
Lehigh Car Wheel & Axle Works, Catasauqua, Pa.
Lima Locomotive & Machine Co., Lima, O.
Litchfield Foundry & Machine Co., Litchfield, Ill.
Marine Iron Co., Bay City, Mich.
Monongahela Mfg. Co., Monongahela, Pa.
Nelsonville Foundry & Machine Co., Nelsonville, O.
New Jersey Foundry & Machine Co., 9 Murray St., New York.
Ottumwa Iron Works, Ottumwa, Ia.
Peacock's Iron Works, Selma, Ala.
Phillips' Mine & Mill Supply Co., Pittsburg, Pa.
Pie, Justin J. (Estate of), Osceola Mills, Pa.
Power & Mining Machinery Co., 52 William St., New York.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.
Ramapo Iron Works, Hillburn, N. Y.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Salmon Iron Co., Freeland, Pa.
Scaife, Wm. B., & Sons, Co., 221 1st Ave., Pittsburg, Pa.
Sheffield Car Co., Three Rivers, Mich.
Spicer Mfg. Co., New Philadelphia, O.
Star Mfg. Co., New Lexington, O.
Stine, S. B., & Son, Osceola Mills, Pa.
Stuebner, G. L., Iron Works, 166 3d St., Long Island City, N. Y.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Tamaqua Mfg. Co., Tamaqua, Pa.
Treadwell, M. H., & Co., 95 Liberty St., New York.
Truax Mfg. Co., Denver, Col.
Wagner-Palmros Mfg. Co., Fairmont, W. Va.
Watt Mining Car Wheel Co., Barnesville, O.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Wellman-Seaver-Morgan Co., Cleveland, O.

88 **Ore.** See 87, Mine Cars.

89 **TRACKS, PORTABLE.**

Atlas Bolt & Screw Co., Cleveland, O.
Bacon, Earle C., 26 Cortlandt St., New York.
Dodge Mfg. Co., Mishawaka, Ind.
Hoisting & Conveying Machinery Co., 44 N. Elizabeth St., Chicago, Ill.
Hoshor-Platt Co., 120 Liberty St., New York.
Hunt, C. W., Co., 45 Broadway, New York.
Mead, John A., & Co., 11 Broadway, New York.
Peteler Portable Railway Mfg. Co., Minneapolis, Minn.
Russel Wheel & Foundry Co., Detroit, Mich.
Steel Cable Engineering Co., 92 State St., Boston, Mass.
Treadwell, M. H., & Co., 95 Liberty St., New York.
Wharton, Wm., Jr., & Co., 25th St. & Washington Ave., Philda.
Whiting Foundry Equipment Co., Harvey, Ill.

90. MINING MACHINERY.

91 **AIR COMPRESSORS.** See Finding List.

92 **AMALGAMATING PANS AND BARRELS.** For use in extracting metals from ore.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Colorado Iron Works Co., Denver, Col.
Fulton Iron Works, San Francisco, Cal.
Hammond Mfg. Co., Portland, Ore.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Krogh Mfg. Co., 9 Stevenson St., San Francisco, Cal.
Marshutz & Cantrell, Main & Howard Sts., San Francisco, Cal.
Union Iron Works, San Francisco, Cal.

93 **BLASTING MACHINES.** See Finding List.

94 **BLOWERS.** See Finding List.

95 **BREAKERS.** See Finding List.

96 **BUCKETS.** See Finding List.

97 **CAGES, MINING.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Bartlett, A. F., & Co., Inc., Saginaw, Mich.
Colorado Iron Works Co., Denver, Col.
Connellsville Machine & Car Co., Connellsville, Pa.
Davis, F. M., Iron Works Co., 8th & Larimer Sts., Denver, Col.
Denver Engineering Works Co., Blake & 30th Sts., Denver, Col.
Eagle Iron Works Co., Terre Haute, Ind.
Ellison, Wm., & Sons Mfg. Co., 1018 N. 6th St., St. Louis, Mo.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.
Kenney & Co., Scottdale, Pa.
Litchfield Foundry & Machine Co., Litchfield, Ill.
Lucas, A., & Sons, Inc., Peoria, Ill.
Marine Iron Co., Bay City, Mich.
Monongahela Mfg. Co., Monongahela, Pa.
Nelsonville Foundry & Machine Co., Nelsonville, O.
Ottumwa Iron Works, Ottumwa, Ia.
Power & Mining Machinery Co., 52 William St., New York.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Stine, S. B., & Son, Osceola Mills, Pa.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Union Iron Works, San Francisco, Cal.
Union Iron Works, Inc., Spokane, Wash.
Vulcan Iron Works, Wilkesbarre, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.

98 **CARS, MINE.** See Finding List.

99 **CHANNELING MACHINES.** For forming channels in a mine.

Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.
Patch, F. R., Mfg. Co., Rutland, Vt.
Rand Drill Co., 128 Broadway, New York. *See adv. page 122.*

100 **CONCENTRATORS, ORE.** For concentrating or separating ore.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Concentrator Co., Joplin, Mo.
Bryant, W. G., Carterville, Mo.
Colorado Iron Works Co., Denver, Col.
Cresson, Geo. V., Co., Allegheny Ave., W. of 17th St., Philda.
Davis, F. M., Iron Works Co., 8th & Larimer Sts., Denver, Col.
Denver Engineering Works Co., Blake & 30th Sts., Denver, Col.
Freeman, J. W., Joplin, Mo.
Fritsch, Arthur, Foundry & Machine Co., St. Louis, Mo.
Fulton Iron Works, San Francisco, Cal.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Knoxville Foundry & Machine Co., Knoxville, Tenn.
Llewellyn Iron Works, Los Angeles, Cal.
Mecklenburg Iron Works, Charlotte, N. C.
Mine & Smelter Supply Co., Denver, Col.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Stearns-Rogers Mfg. Co., 1718 California St., Denver, Col.
Union Iron Works, San Francisco, Cal.
Davis Calyx Drill Co., 128 Broadway, New York.

101 **CRUSHERS.** See Finding List.

102 **DREDGING MACHINES.** See Finding List.

103 **DRILLS.**

104 **Core.** Which bring up a core in drilling.

American Diamond Rock Drill Co., 95 Liberty St., New York.
Cyclone Drilling Machine Co., Orrville, O.
Davis Calyx Drill Co., 128 Broadway, New York.
Ellison, Wm., & Sons, Mfg. Co., 1018 N. 6th St., St. Louis, Mo.
Gardner Electric Drill & Machinery Co., Cleveland, O.
Muirhead, John, & Son, Pittston, Pa.
Preslar-Crawley Mfg. Co., Cincinnati, O.
Standard Diamond Drill Co., Monadnock Blk., Chicago, Ill.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.

105 **Diamond.** See 104, Core Drills.

106 **Electric.** Operated by electricity.

Denver Engineering Works Co., Blake & 30th Sts., Denver, Col.
Gardner Electric Drill & Machinery Co., Cleveland, O.
Hercules Electric Drill Co., 32 Broadway, New York.
Marvin Electric Drill Co., Binghamton, N. Y.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.

107 **Hand.**

Hasenzahl, William, Cincinnati, O.
Howell's Mining Drill Co., Plymouth, Pa.

108 **Pneumatic.** Operated by compressed air.

Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Howell's Mining Drill Co., Plymouth, Pa.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.

DRILLS, PNEUMATIC, continued

Rand Drill Co., 128 Broadway, New York. *See adv. page 122.*
Wood, Warren, Paterson, N. J.

109 **Prospecting.** See 104, Core Drills.

110 **Steam.** Operated by steam.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Belleville Pump & Skein Works, Belleville, Il.
Cycone Drilling Machine Co., Orrville, O.
Jeffrey Mfg. Co., Columbus, O.
Le Grand Mine Drill Works, Wilkesbarre, Pa.
McKiernan Drill Co., 170 Broadway, New York.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Union Iron Works, San Francisco, Cal.

111 **DRIERS.** See Finding List.

112 **ENGINES, MINING.** See Finding List.

113 **FEEDERS, ORE.** For feeding ore to crushers.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Bartlett, C. O., & Snow Co., Cleveland, O.
Davis, F. M., Iron Works, Co., 8th & Larimer Sts., Denver, Col.
Frenier, J. H., Rutland, Vt.
Fulton Iron Works, San Francisco, Cal.
Hammond Mfg. Co., Portland, Ore.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Mecklenburg Iron Works, Charlotte, N. C.
Power & Mining Machinery Co., 52 William St., New York.
Union Iron Works, San Francisco, Cal.

114 **FURNACES, CALSING, SMELTING, ETC.** See Finding List.

115 **GRINDING PANS.** For grinding ore to be amalgamated.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Carlin's, Thos., Sons, Co., Allegheny, Pa.
Hayden, P., Saddlery Hardware Co., Columbus, O.
Phillips & McLaren, Pittsburg, Pa.

116 **HOISTS, MINE.** See Finding List

117 **LAMPS, MINERS'.** Safety lamps used in mines.

American Safety Lamp & Mine Supply Co., Scranton, Pa.
American Tube & Stamping Co., Bridgeport, Conn.
Anton, George, Monongahela, Pa.
Everhart Brass Works, Scranton, Pa.
Hughes Bros., Scranton, Pa.
Hunt, Alexander E., Scranton, Pa.
Portable Electric Power & Light Co., Jersey City, N. J.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Shepard, Sidney, & Co., Buffalo, N. Y.
Somers, Fitler, & Todd Co., Pittsburg, Pa.

118 **MILLS, QUARTZ.** Roller mills for reducing quartz to small proportions.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.

MILLS, QUARTZ, continued

Alsing, J. R., Co., 75 Guernsey St., Brooklyn, N. Y.
Dyer Bros., 240 Montgomery St., San Francisco, Cal.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Kent Mill Co., 170 Broadway, New York.
Krogh Mfg. Co., 9 Stevenson St., San Francisco, Cal.
Marshutz & Cantrell, Main & Howard Sts., San Francisco, Cal.
Raymond Bros., Impact Pulverizer Co., 143 Laflin St., Chicago, Ill.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Stillwell-Bierce & Smith-Vaile Co., Dayton, O.
Thompson & Boyle Co., Los Angeles, Cal.

119 **Stamp.** For reducing ore by stamping.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Arizona & Sonora Mfg. Co., Nogales, Ariz.
Caird & Hawksworth, Helena, Mont.
Colorado Iron Works Co., Denver, Col.
Davis, F. M., Iron Works Co., 8th & Larimer Sts., Denver, Col.
Denver Engineering Works Co., Blake & 30th Sts., Denver, Col.
Globe Iron Works, Inc., Stockton, Cal.
Hammond Mfg. Co., Portland, Ore.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Llewellyn Iron Works, Los Angeles, Cal.
Lombard Iron Works & Supply Co., Augusta, Ga.
McFarlane & Co., Denver, Col.
Mecklenburg Iron Works, Charlotte, N. C.
Merrall's Mill Co., San Francisco, Cal.
National Iron Works, Inc., Spokane, Wash.
Northwestern Iron Works, Seattle, Wash.
Portage Lake Foundry & Machine Co., Hancock, Mich.
Power & Mining Machinery Co., 52 William St., New York.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Stearns-Roger Mfg. Co., 1718 California St., Denver, Col.
Union Iron Works, San Francisco, Cal.
Union Iron Works, Inc., Spokane, Wash.

120 **PULVERIZERS.** See Finding List.

121 **PUMPS, MINE.** See Finding List.

122 **SAMPLERS OR TESTERS.** Used by assayers for testing ores.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.
Keystone Driller Co., Beaver Falls, Pa.
Ross, Chas., & Son Co., 16-20 Steuben St., Brooklyn, N. Y.

123 **SCREENS.** See Finding List.

124 **SEPARATORS, ORE.** For separating ore from quartz, earth, etc.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Gold & Silver Extraction Co., Denver, Col.
Raymond Bros., Impact Pulverizer Co., 143 Laflin St., Chicago, Ill.
Wetherill Separating Co., 68 Broad St., New York.

SEPARATORS, continued

125 **Magnetic.** In which a powerful magnet separates magnetic iron ore from sand or gangue.

American Concentrator Co., Joplin, Mo.
Ding's Electro-Magnetic Separator Co., Milwaukee, Wis.

126 **SIGNALING APPARATUS, MINE.**

American Safety Lamp & Mine Supply Co., Scranton, Pa.
Everhart Brass Works, Scranton, Pa.
Flint-Lomax Electric & Mfg. Co., Denver, Col.

127 **TIPPLES, MINE.** For tipping or dumping mine cars.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Garry Iron & Steel Co., Cleveland, O. *See adv. page 127.*
Helmick Foundry & Machine Co., Fairmont, W. Va.
Heyl & Patterson, 51 Water St., Pittsburg, Pa.
Kenney & Co., Scottdale, Pa.
Minneapolis Steel & Machinery Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Monongahela Mfg. Co., Monongahela, Pa.
Mullen, John, & Son, Shamokin, Pa.
Nelsonville Foundry & Machine Co., Nelsonville, O.
Scaife, Wm. B., & Sons Co., 221 1st Ave., Pittsburg, Pa.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Wagner-Palmros Mfg. Co., Fairmont, W. Va.
Wellman-Seaver-Morgan Co., Cleveland, O.

128 **TOOLS, MINERS'.**

Armstrong Mfg. Co., Bridgeport, Conn.
Atlas Pipe Wrench Co., 123 Liberty St., New York.
Beall Bros., Alton, Ill.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Cummings, W. J., Wellston, O.
Hardsocq, Martin, Mfg. Co., Ltd., Allegheny, Pa.
Kelly & Jones Co., Pittsburg, Pa.
Phillips Mine & Mill Supply Co., Pittsburg, Pa.
Scranton Supply & Machinery Co., Scranton, Pa.
Somers, Fitler & Todd Co., Pittsburg, Pa.
Trimont Mfg. Co., Roxbury, Mass.
Warwood Tool Co., Wheeling, W. Va.
Wells Bros., & Co., Greenfield, Mass.
Wyoming Shovel Works, Wyoming, Pa.

129 **WASHERS, ORE.** For cleansing ore from foreign matter.

Bacon, Earle C., 26 Cortlandt St., New York.
Jeffrey Mfg. Co., Columbus, O. *See adv. page 122.*
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago.
McLanahan Stone Machine Co., Hollidaysburg, Pa.
Scaife, Wm. B., & Sons, Co., 221 1st Ave., Pittsburg, Pa.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Tamaqua Mfg. Co., Tamaqua, Pa.

SECTION VII

AGRICULTURAL MACHINERY.

INDEX TO DEPARTMENTS.

	Page
Agricultural Machinery - - - - - - - -	566
Flour Mill Machinery - - - - - - - - -	594

MANUFACTURERS OF

AGRICULTURAL MACHINERY.

Alphabetical Index.

Abele, Chris., 537 W. 50th St., New York.—Grinding Mills, Bolters and Grain Driers.
Acme Harvester Co., Peoria, Ill.—Harvesting Machinery, etc.
Adams, W. T., Machine Co., Corinth, Miss.—Grinding Mills.
Admiral Hay Press Co., Kansas City, Mo.—Feeders.
Adriance Platt & Co., Poughkeepsie, N. Y.—Harvesting Machinery, Harrows, etc.
Advance Thresher Co., Battle Creek, Mich.—Harvesting Machinery.
Akron Cultivator Co., Akron, O.—Cultivators, Harvesters, Implements.
Allen, S. L., & Co., 1107 Market St., Philadelphia, Pa.—Cultivators, Seed Sowers, etc.
Allis-Chalmers Co., N. Y. Life Bldg., Chicago, Ill.—Roller Mills, Flour Bolters, etc.
American Buncher Co., Indianapolis, Ind.—Clover Bunchers.
American Engineering Co., Springfield, O.—Attrition Mills, Grain Driers.
American Fork & Hoe Co., Cleveland, O.—Agricultural Implements.
American Harrow Co., Detroit, Mich.—Cultivators, Harrows, etc.
American Lawn Mower Co., Muncie, Ind.—Lawn Mowers.
American Seeding Machine Co., Springfield, O.—Cultivating Machinery, Seed Sowers, etc.
American Shredder Co., Madison, Wis.—Feeders and Shredders.
Ames Plow Co., Quincy Hall, Boston, Mass.—Cultivating Machinery, Grinding Mills, etc.
Appleton Mfg. Co., Batavia, Ill.—Hay Carriers, Threshers, Grinding Mills, etc.
Aspinwall Mfg. Co., Jackson, Mich.—Planters, Potato Diggers, etc.
Atlanta Agricultural Works, Atlanta, Ga.—Planters, Fertilizer Distributors, etc.
Aultman Co., Canton, O.—Stackers, Threshers, Sieves, etc.
Aultman & Taylor Mchy. Co., Mansfield, O.—Grinding Mills, Threshers, etc.
Automatic Weighing Machine Co., Green & Bay Sts., Jersey City, N. J. Bagging, Weighing and Loading Machines.
Avery, B. F., & Sons, Louisville, Ky.—Cultivating Machinery, Threshers, etc.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.—Cultivators, Threshers, etc.
Babcock Mfg. Co., Leonardsville, N. Y.—Cultivating Machinery, etc.
Bacon Mfg. Co., Pontiac, Mich.—Sorters.
Baker & Hamilton, San Francisco, Cal.—Cultivating Machinery, Grinding Mills, etc.
Barker Feeder Co., Racine, Wis.—Feeders and Threshers.
Barley, Thos. K., Sedalia, Mo.—Rakes.
Barnard & Leas Mfg. Co., Moline, Ill.—Rolling Mills, Bolters, Flour Dressers, etc.
Barry & Zecher, Lancaster, Pa.—Corn Crushers.

Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.—Grinding Mills, Threshers, etc.
Bateman Mfg. Co., Grenloch, N. J.—Cultivating Machinery.
Beall Improvements Co., Decatur, Ill.—Aspirators, Grain Driers, etc.
Beeman & Co., Minneapolis, Minn.—Threshers, Grain Cleaning Machines.
Beery Mfg. Co., Upper Sandusky, O.—Grinding Mills.
Belcher & Taylor Agr. Tool Co., Chicopee Falls, Mass.—Cultivating Machinery.
Belle City Mfg. Co., Racine Junction, Wis.—Threshers, Feed Cutters.
Bement's, E., Sons, Lansing, Mich.—Cultivating Machinery.
Benicia Agr. Works, Benicia, Cal.—Cultivating Machinery.
Bennett, H. L., & Co., Westerville, O.—Harvesters, Stump Pullers, etc.
Best Mfg. Co., San Leandro, Cal.—Plows.
Birdsell Mfg. Co., South Bend, Ind.—Feeders, Stackers, etc.
Bissell Chilled Plow Works, South Bend, Ind.—Plows.
Blair Mfg. Co., Springfield, Mass.—Lawn Mowers.
Blount, H. F., Evansville, Ind.—Plows.
Blue Valley Mfg. Co., Manhattan, Kan.—Grinding Mills.
Bowen & Quick, Auburn, N. Y.—Threshers, Fanning Mills, etc.
Bowsher, N. P., Co., South Bend, Ind.—Grinding Mills, Baggers, etc.
Bradley, David, Mfg. Co., Bradley, Ill.—Cultivating Machinery.
Brinly-Hardy Co., Louisville, Ky.—Cultivators, Plows, etc.
Brown, Geo. W., & Co., Galesburg, Ill.—Cultivating Machinery, Shellers.
Brown Mfg. Co., Zanesville, O.—Cultivators, Planters, etc.
Brown-Manly Plow Co., Malta, O.—Cultivating Machinery.
Buch's, A., Sons, Elizabethtown, Pa.—Harrows, Cutters, Horse Powers.
Bucher & Gibbs Plow Co., Canton, O.—Cultivators, Rollers, etc.
Buckeye Feed Mill Co., Springfield, O.—Horse Powers.
Buffalo Pitts Co., 20 Carolina St., Buffalo, N. Y.—Threshers, Stackers.
Bushnell, G. H., Press Co., Thompsonville, Conn.—Fruit Grinding Machines.
Butler, E. T., 101 Girard Ave., Philadelphia, Pa.—Bolters.
Butterworth & Lowe, Grand Rapids, Mich.—Stump Pullers.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.—Grinding Mills, Grain Cleaners, etc.
Campbell, S. K., Central Bridge, N. Y.—Grinding Mills, Threshers, etc.
Campbell Corn Drill Co., Harrison, O.—Drills, Sowers, etc.
Cardwell Machine Co., Richmond, Va.—Threshers, Planters, etc.
Carnegie Plow & Mfg. Co., Carnegie, Pa.—Plows, Soil Pulverizers.
Case, J. I., Plow Works, Racine, Wis.—Plows.
Case, J. I., Threshing Machine Co., Racine, Wis.—Cultivators, Planters, Threshers, etc.
Case Mfg. Co., Columbus, O.—Bolters, Flour Dressers, etc.
Cash Supply & Mfg. Co., Kalamazoo, Mich.—Cultivating Machinery, Fanning Mills, etc.
Cassopolis Mfg. Co., Cassopolis, Mich.—Drills.
Caward, R. S., Cresco, Ia.—Stump Pullers.
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.—Lawn Mowers.
Challenge Windmill & Feed Mill Co., Batavia, Ill.—Cutters, Shellers, etc.
Chamberlin Rider Mfg. Co., Hudson, Mich.—Cultivating Machinery.
Chambers, Bering, Quinlan Co., Decatur, Ill.—Cultivating Machinery, Hay Loaders, etc.
Champion Thresher Co., Orrville, O.—Grain Registers.
Chattanooga Implement & Mfg. Co., East Chattanooga, Tenn.—Hullers, Plows, etc.
Chattanooga Plow Co., Chattanooga, Tenn.—Plows.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.—Cultivating Machinery, Planters, etc.

City Iron Works, Grand Ledge, Mich.—Corn Crushers.
Clipper Chilled Plow Co., Elmira, N. Y.—Cultivators and Rakes.
Clipper Lawn Mower Co., Norristown, Pa.—Lawn Mowers.
Clipper Plow Co., Defiance, O.—Cultivators, Corn Cutters, etc.
Clipper Shear Co., Clyde, O.—Pruning Implements.
Closz & Howard Mfg. Co., Webster City, Ia.—Sieves.
Coffeyville Implement & Mfg. Co., Coffeyville, Kan.—Harrows and Plows.
Coldwell Lawn Mower Co., Newburgh, N. Y.—Lawn Mowers.
Cole, R. D., Mfg. Co., Newnan, Ga.—Grinding Mills.
Colean Mfg. Co., Peoria, Ill.—Threshers.
Collins Plow Co., Quincy, Ill.—Cultivators, Hay Carriers, etc.
Colton, G. D., & Co., Galesburg, Ill.—Grinding Mills, Horse Powers.
Columbian Feed Governor Co., Minneapolis, Minn.—Feed Governors.
Comstock, Geo. S., Mechanicsburg, Pa.—Feed Cutters, Horse Powers.
Conner, J. W., Orangeville, Pa.—Threshers, Feed Cutters, etc.
Continental Tool Co., Frankfort, N. Y.—Agricultural Implements.
Corn King Husker Co., Rochester, Ind.—Huskers and Shredders.
Cortland Implement Co., Cortland, N. Y.—Fertilizer Distributors.
Cree, S. G., & Son, Wheelock, Vt.—Horse Powers.
Cross, George A., Watertown, N. Y.—Plows.
Crown Mfg. Co., Phelps, N. Y.—Drills, Seed Sowers, etc.
Cutaway Harrow Co., Higganum, Conn.—Cultivating Machinery.
Cutler Co., North Wilbraham, Mass.—Grain Driers, etc.
Cyclone Seeder Co., Urbana, Ind.—Seed Sowers.
Dain Mfg. Co., Ottumwa, Ia.—Stackers, Shellers, Cutters, etc.
Daley, M. H., Charles City, Ia.—Harrows.
Daniels Machine Co., Woodstock, Vt.—Feed Cutters.
Dederick's, P. K., Sons, Albany, N. Y.—Horse Powers.
Deere & Co., Moline, Ill.—Cultivators, Plows, etc.
Deere & Mansur Co., Moline, Ill.—Cultivating Machinery, Planters, etc.
De Loach Mill Mfg. Co., Atlanta, Ga.—Grinding Mills.
Dehuer-Wuerpel Mill Building Co., 1607-1617 S. Third St., St. Louis, Mo.—Roller Mills.
Dempster Mill Mfg. Co., Beatrice, Neb.—Cultivators, Drills, etc.
Dempwolf, C. H., & Co., York, Pa.—Fertilizer Distributors.
Deuscher, H. P., Co., Hamilton, O.—Cultivators, Planters, etc.
Dick, Joseph, Agricultural Works, Canton, O.—Hay Carriers, Shredders, etc.
Dickey Mfg. Co., Racine, Wis.—Grain Cleaning Machines.
Dille & McGuire Mfg. Co., Richmond, Ind.—Lawn Mowers.
Disston, Henry, & Sons, Tacony & N. Front Sts., Philadelphia, Pa.—Post Hole Diggers.
Ditch Adjustable Sieve Co., Mansfield, O.—Sieves.
Donaldson Bros., Mt. Clemens, Mich.—Cultivating Machinery, etc.
Doughten, H. W., Moorestown, N. J.—Potato Diggers, Drills.
Dowagiac Mfg. Co., Dowagiac, Mich.—Drills.
Dowden Mfg. Co., Prairie City, Ia.—Harvesters, Potato Sorters, etc.
Draver Bros., Richmond, Ind.—Dust Collectors.
Dubuque Turbine & Roller Mill Co., Dubuque, Ia.—Bolters, Purifiers.
Dunham, J. W., & Son, Berea, O.—Clod Crushers, Corn Shellers, etc.
Duplex Mfg. Co., South Superior, Wis.—Grinding Mills, etc.
Durling, A. N., Detroit, Mich.—Fanning Mills.
Eagle Machine Co., Lancaster, O.—Grinding Mills, Planters, etc.
Eagle Mfg. Co., Kansas City, Mo.—Cultivating Machinery, etc.
Eaton, W. T., Mfg. Co., 4 Sherman St., Chicago, Ill.—Bagging, Weighing and Loading Machines.
Eddy, W., Plow Co., Greenwich, N. Y.—Cultivating Machinery, Threshers, etc.

Edwards, M. L., Co., Salem, O.—Feed Cutters.
Elgin Wind Power & Pump Co., Elgin, Ill.—Grinding Mills.
Ellis Keystone Agricultural Works, Pottstown, Pa.—Threshers, Horse Powers, etc.
Elwood Lawn Mower Co., Elwood, Ind.—Lawn Mowers.
Emerson Mfg. Co., Rockford, Ill.—Cultivators, Planters, Rakes, etc.
Enterprise Mfg. Co., Columbiana, O.—Grinding Mills, Horse Powers.
Enterprise Mfg. Co., 3d & Dauphin Sts., Philadelphia, Pa.—Lawn Mowers.
Eureka Bark Mill Co., Lancaster, Pa.—Grinding Mills, etc. *See adv. page 123.*
Eureka Mower Co., Utica, N. Y.—Cultivating and Harvesting Mchy.
Everitt, J. A., 227 W. Washington St., Indianapolis, Ind.—Drills, Sowers, etc.
Excel Mfg. Co., Pottersville, N. J.—Grinding Mills, Shellers, etc.
F. & N. Lawn Mower Co., Richmond, Ind.—Lawn Mowers, etc.
Fargo Creamery Supply House, Lake Mills, Wis.—Clippers.
Farquhar, A. B., Co., Ltd., York, Pa.—Cultivating Machinery, Planters, Threshers, etc.
Flint & Walling Mfg. Co., Kendallville, Ind.—Corn Shellers and Cutters.
Foos Mfg. Co., Springfield, O.—Grinding Mills, Bolters, etc.
Fosston Wind Stacker Co., St. Louis Park, Minneapolis, Minn.—Stackers.
Foster & Williams Mfg. Co., Racine, Wis.—Sowers, Fanning Mills, etc.
Fountain City Drill Co., La Crosse, Wis.—Cultivating Machinery.
Frick & Co., Waynesboro, Pa.—Stackers and Threshers.
Fuller & Johnson Mfg. Co., Madison, Wis.—Cultivating Machinery, Transplanters, etc.
Gaar, Scott & Co., Richmond, Ind.—Threshers, Stackers, etc.
Gale Mfg. Co., Albion, Mich.—Cultivating Machinery, etc.
Geiser Mfg. Co., Waynesboro, Pa.—Hullers, Threshers, etc.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.—Corn Shellers, Sowers, etc.
Geneva Tool Co., Geneva, O.—Agricultural Implements.
Gill, J. H., Raleigh, N. C.—Cotton Planters, Plows, etc.
Goodell Co., Antrim, N. H.—Paring Machines, Sowers, etc.
Gowanda Agr. Works, Gowanda, N. Y.—Cultivators, Diggers, etc.
Grand Detour Plow Co., Dixon, Ill.—Cultivating Machinery.
Grant-Ferris Co., Troy, N. Y.—Threshers, Fanning Mills, etc.
Gray's, A. W., Sons, Middletown Springs, Vt.—Threshers, Feed Cutters.
Great Western Mfg. Co., Leavenworth, Kan.—Bolters, Grinding Mills.
Griscom & McFeeley, 521-523 N. 23d St., Philadelphia, Pa.—Roller Mills, Purifiers, etc.
Ground Hog Plow & Foundry Co., Clarksville, Tenn.—Plows.
Hallock, D. Y., & Sons, 24 York St., York, Pa.—Plows, etc.
Hapgood Plow Co., Alton, Ill.—Cultivating Machinery.
Harder Mfg. Co., Cobleskill, N. Y.—Threshers, Fanning Mills, etc.
Harmon-Whitmore Co., Jackson, Mich.—Aspirators, Purifiers, etc.
Harrison, W. R., & Co., Massillon, O.—Fodder Cutters.
Harrison Mfg. Co., Sterling, Ill.—Corn Planters.
Harrison Machine Works, Belleville, Ill.—Threshers, Horse Powers.
Hart Grain Weigher Co., Peoria, Ill.—Bagging, Weighing and Loading Machines.
Hartman Mfg. Co., Vincennes, Ind.—Cultivators, Stalk Cutters, etc.
Haworth & Sons Mfg. Co., Decatur, Ill.—Drills, etc.
Hayes Pump & Planter Co., Galva, Ill.—Cultivators, Planters, etc.
Heebner & Sons, Lansdale, Pa.—Threshers, Horse Powers, etc.
Heilman Machine Works, Evansville, Ind.—Threshers.
Heine Mfg. Co., Wahpeton, N. Dak.—Band Cutters, etc.

Hench & Dromgold Co., York, Pa.—Cultivators, Planters, etc.
Henley Lawn Mower Co., Richmond, Ind.—Lawn Mowers.
Hercules Mfg. Co., Centerville, Ia.—Stump Pullers, Cultivators etc.
Hercules Mfg. Co., 155½ N. High St., Columbus, O.—Grain Cleaning Machines.
Herschell, R., Mfg. Co., Peoria, Ill.—Post Hole Diggers.
Hess Warming & Ventilating Co., 709 Tacoma Bldg., Chicago, Ill.—Grain Driers, Purifiers, etc.
Hickox, Mull & Hill Co., Toledo, O.—Garden Implements, etc.
Hirsch Bros., 267 Reed St., Milwaukee, Wis.—Fanning Mills, Cutters.
Hobson & Co., 17 State St., New York.—Cultivating Mchy., Shellers.
Hocking Valley Mfg. Co., Lancaster, O.—Hay Tools, Horse Powers, etc.
Hoke Mfg. Co., Frankfort, Ind.—Cultivators, etc.
Holt Mfg. Co., Stockton, Cal.—Harvesters.
Hoover-Prout Co., Avery, O.—Potato Diggers and Sorters.
Horton Mfg. Co., Painesville, O.—Corn Crushers.
Hotchkiss, E. M., Co., New Haven, Conn.—Lawn Mowers.
Houser & Haines Mfg. Co., Stockton, Cal.—Harvesters.
Howes, S., Co., Silver Creek, N. Y.—Grinding Mills, Bolters, etc.
Huber Mfg. Co., Marion, O.—Threshers, etc.
Hughes & Smythe, Galena, O.—Corn Planters, etc.
Humphrey & Sons, Joliet, Ill.—Grinding Mills, etc.
Hunt, Helm & Ferris, Harvard, Ill.—Hay Carriers and Stackers.
Huntley Mfg. Co., Silver Creek, N. Y.—Bolters, Packers, etc.
Hussey Plow Co., Berwick, Me.—Cultivating Machinery.
Hutchison, John, Mfg. Co., Jackson, Mich.—Roller Mills, Bolters, etc.
Hydraulic Press Mfg. Co., 155 Main St., Mt. Gilead, O.—Bagging and Weighing Machines.
Indiana Mfg. Co., Indianapolis, Ind.—Hay Stackers.
International Harvester Co., Adams & Jefferson Sts., Chicago, Ill.—Harvesting Machinery, etc.
Invincible Grain Cleaner Co., Silver Creek, N. Y.—Fanning Mills, Packers, etc.
Iowa Grinder & Steamer Works, Waterloo, Ia.—Grinding Mills.
Iwan Bros., Streator, Ill.—Post Hole Diggers.
Jackson, Byron, Machine Works, 625 6th St., San Francisco, Cal.—Harvesting Machinery, etc.
Janesville Machine Co., Janesville, Wis.—Cultivators, Sowers, etc.
Janney Mfg. Co., Ottumwa, Ia.—Corn Planters, Shellers, etc.
Jeeliff, C. O., & Co., Southport, Conn.—Onion Pullers.
Jeffrey Mfg. Co., Columbus, O.—Horse Powers.
Jenkins Hay Rake & Stacker Co., Browning, Mo.—Rakes.
Jewett, H. M., Moravia, N. Y.—Lawn Mowers.
Johnson & Field Co., Racine, Wis.—Seed Sowers, Fanning Mills, etc.
Johnson Foundry & Machine Works, Battle Creek, Mich.—Grain Driers and Hullers.
Johnston Harvester Co., Batavia, N. Y.—Harvesting Machinery, etc.
Joliet Mfg. Co., Youngs Ave. & Cass St., Joliet, Ill.—Corn Shellers, Horse Powers.
Kaestner & Co., 241 S. Jefferson St., Chicago, Ill.—Grinding Mills.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.—Harvesters, Stackers, etc.
Keller Mfg. Co., Sauk Centre, Minn.—Harrows.
Kelly, O. S., Western Mfg. Co., Iowa City, Ia.—Grinding Mills, Stackers, etc.
Kemp, J. S., Mfg. Co., Newark Valley, N. Y.—Fertilizer Distributors.
Kemp & Burpee Mfg. Co., Syracuse, N. Y.—Fertilizer Distributors.
Keystone Farm Machine Co., York, Pa.—Cultivating Machinery, Planters, etc.

Keystone Mfg. Co., Sterling, Ill.—Cultivating and Harvesting Mchy.
King & Hamilton Co., Ottawa, Ill.—Cultivators, Shellers, etc.
Kingman & Co., Peoria, Ill.—Cultivators, Planters, etc.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.—Threshers, Stackers, etc.
Klondike Wheat Huller Co., York, Neb.—Grain Cleaning Machines.
Klotz Machine Co., Sandusky, O.—Fruit Grinding Machines, etc.
Knickerbocker Co., Jackson, Mich.—Flour Dressers, Purifiers, etc.
La Crosse Plow Co., La Crosse, Wis.—Cultivating Machinery.
Lamb & Co., Freeport, Ill.—Grinding Mills, etc.
Lansing Motor & Pump Co., Lansing, Mich.—Grinding Mills.
Law Mfg. Co., Merriam Park, St. Paul, Minn.—Hay Carriers, Harrows.
Lean, Roderick, Mfg. Co., Mansfield, O.—Harrows, Land Rollers.
Leavitt Mfg. Co., Urbana, Ill.—Lawn Mowers, Rakes, etc.
Lehr Agricultural Co., Fremont, O.—Cultivators, Bean Harvesters, etc.
Le Roy Plow Co., Le Roy, N. Y.—Plows, Harvesters, etc.
Litchfield Mfg. Co., Webster City, Ia.—Grinding Mills.
Lohr, C. W., Mfg. Co., Wayne, Mich.—Grain Cleaning Machines, etc.
Louden Machinery Co., Fairfield, Ia.—Stackers, Hay Carriers, etc.
Luthy & Co., 318 S. Water St., Peoria, Ill.—Planters, Harrows, etc.
McSherry Mfg. Co., Middletown, O.—Drills, Transplanters, etc.
McWhorter Mfg. Co., Riverton, N. J.—Drills, Potato Planters.
Macgowan & Finigan Fdry. & Mch. Co., St. Louis, Mo.—Harrows, etc.
Maish Mfg. Co., Warsaw, Ind.—Grinding Mills, Bolters, etc.
Mann, F. W., Co., Milford, Mass.—Grinding Mills, etc.
Maplebay Wind Stacker Co., Crookston, Minn.—Stackers.
Marion Mfg. Co., Marion, O.—Threshers, Stackers, etc.
Marseilles Mfg. Co., Marseilles, Ill.—Corn Shellers, Fanning Mills, etc.
Mast, Foos & Co., Springfield, O.—Lawn Mowers.
Mast, P. P., & Co., Springfield, O.—Cultivators, Sowers, etc.
Mecklenburg Iron Works, Charlotte, N. C.—Threshers, Reapers, etc.
Meisel Mfg. Co., Port Huron, Mich.—Roller Mills, Purifiers, etc.
Merrill Iron Works, Merrill, Wis.—Feed Cutters, etc.
Merriman Bros., & Co., Ft. Atkinson, Wis.—Corn Shellers.
Messinger Mfg. Co., Tatamy, Pa.—Cultivators, Threshers, etc.
Michael, C. H., Mfg. Co., Laporte, Ind.—Fanning Mills.
Miller, L. J., 1233 Harrison Ave., Cincinnati, O.—Grinding Mills.
Miller, William S., Meyersdale, Pa.—Grain Registers.
Miller Anchor Co., Norwalk, O.—Post Hole Diggers.
Miller Bros., Rochester, Mich.—Seed Sorters, etc.
Milne Mfg. Co., Monmouth, Ill.—Stump Pullers.
Minneapolis Steel & Mchy. Co., Minneapolis, Minn.—Grain Samplers.
Minneapolis Threshing Machine Co., W. Minneapolis, Minn.—Threshers, Stackers, etc.
Mishawaka Plow Co., Mishawaka, Ind.—Cultivators, Plows.
Mitchell-Parks Mfg. Co., 1234 S. 7th St., St. Louis, Mo.—Dust Collectors.
Moline Plow Co., Moline, Ill.—Cultivating Machinery, Planters, etc.
Monarch Feeder & Stacker Co., Cedar Falls, Ia.—Stackers, Feeders, etc.
Monarch Grubber Co., Lone Tree, Ia.—Stump Pullers, etc.
Monitor Drill Co., Minneapolis, Minn.—Drills, Weeders, etc.
Morley Self Feeder Co., Sioux City, Ia.—Self Feeders, etc.
Morningstar Mfg. Co., Napoleon, O.—Threshers, etc.
Morris, Henry G., 408 Bourse, Philadelphia, Pa.—Grain Driers.
Morrison Mfg. Co., Ft. Madison, Ia.—Cultivating Machinery.
Mountville Mfg. Co., Mountville, Pa.—Planters, Shellers, etc.
Mulford Heater Co., Galva, Ill.—Corn Planters.
Munnsville Plow Co., Munnsville, N. Y.—Plows, Rollers, etc.
Munson Bros., Co., Utica, N. Y.—Grinding Mills, Threshers, etc.
Myers, F. E., & Bro., Ashland, O.—Hay Carriers, Horse Powers.

Nash, Duane H., Millington, N. J.—Harrows, etc.
National Machine Co., Columbus, Ind.—Band Cutters, etc.
Nesmith, C. L., Washington, Ill.—Grain Registers.
Newark Machine Co., Newark, O.—Clover Hullers, etc.
New Birdsall Co., Auburn, N. Y.—Threshers, Stackers, etc.
New England Automatic Weighing Mch. Co., 275 Congress St., Boston, Mass.—Bagging and Weighing Machines.
Ney Mfg. Co., Canton, O.—Mowers, Hay Carriers, etc.
Nichols & Shepard Co., Battle Creek, Mich.—Threshers, Stackers, etc.
Nordyke & Marmon Co., Indianapolis, Ind.—Grinding Mills, Bolters, Dressers, etc.
Northwest Thresher Co., Stillwater, Minn.—Threshers, Horse Powers.
Noye Mfg. Co., Buffalo, N. Y.—Grinding Mills, Bolters, etc.
Ohio Cultivator Co., Bellevue, O.—Cultivating Mchy., Harvesters, etc.
Ohio Rake Co., Dayton, O.—Cultivating Machinery, etc.
Oliver Chilled Plow Co., South Bend, Ind.—Plows.
Ontario Drill Co., Despatch, N. Y.—Drills, etc.
Ordway, A. F., & Sons, Beaver Dam, Wis.—Flour Dressers, Dusters.
Osborne, D. M., & Co., Auburn, N. Y.—Cultivating and Harvesting Machinery.
Otsego Fork Mills Co., Girard, Pa.—Agricultural Implements.
Owatonna Mfg. Co., Owatonna, Minn.—Seed Sowers.
Paine-Ellis Grain Drier Co., Milwaukee, Wis.—Grain Driers.
Papec Machine Co., Lima, N. Y.—Feed Cutters.
Parlin & Orendorff Co., Canton, Ill.—Cultivating Mchy., Planters, etc.
Parsons Band Cutter & Self Feeder Co., Newton, Ia.—Self Feeders, etc.
Parsons-Rich & Co., Newton, Ia.—Self Feeders, etc.
Patch, A. H., Clarksville, Tenn.—Grinding Mills.
Patten & Stafford, Canastota, N. Y.—Harrows, Rakes, etc.
Peek, S. H., East Aurora, N. Y.—Plows, Potato Markers, etc.
Pekin Plow Co., Pekin, Ill.—Cultivating Machinery, etc.
Pella Stacker Co., Pella, Ia.—Stackers.
Peru Plow & Wheel Co., Peru, Ill.—Cultivating Machinery, Planters.
Peter's Pump Co., Kewanee, Ill.—Corn Planters.
Pfleghar, F. P., & Sons, New Haven, Conn.—Agricultural Implements.
Philadelphia Lawn Mower Co., Philadelphia, Pa.—Lawn Mowers.
Phillips, M. T., Pomeroy, Pa.—Clippers.
Pneumatic Elevator & Weigher Co., 165 E. Morris St., Indianapolis, Ind.—Bagging, Weighing and Loading Machines.
Porter, J. E., Co., Ottawa, Ill.—Planters, Implements, etc.
Port Huron Engine & Thresher Co., Port Huron, Mich.—Threshers, Harvesters, etc.
Prinz & Rau Mfg. Co., 659 E. Water St., Milwaukee, Wis.—Dust Collectors, etc.
Racine-Sattley Mfg. Co., Springfield, Ill.—Cultivators, Planters, etc.
Randolph, A. C., & Co., Newton, Ia.—Stackers, etc.
Red Jacket Mfg. Co., Davenport, Ia.—Hay Carriers.
Reed Mfg. Co., Kalamazoo, Mich.—Cultivators, Harvesters, etc.
Reese, Fred. W., Paris, Ill.—Threshers, Sowers, etc.
Reeves & Co., Columbus, Ind.—Clover Hullers, etc.
Rhea-Thielens Implement Co., Peoria, Ill.—Planters, Sowers, etc.
Richardson Mfg. Co., Worcester, Mass.—Tedders, Sowers, etc.
Richmond City Mill Works, Richmond, Ind.—Grinding Mills, Bolters.
Richmond Mfg. Co., Lockport, N. Y.—Grain Driers, Dusters, etc.
Richmond Plow Co., Richmond, Ind.—Cultivators, etc.
Ridgway, Craig & Son, Co., Coatesville, Pa.—Corn Crushers.
Roberts, Thomas, Springfield, O.—Grinding Mills.
Robinson & Co., Richmond, Ind.—Threshers, Stackers, etc.
Robinson Mfg. Co., Muncy, Pa.—Grinding Mills, Flour Dressers, etc.

Rock Island Plow Co., Rock Island, Ill.—Cultivating Machinery, Planters, etc.
Rockford Mfg. Co., Rockford, Ill.—Cultivating Machinery.
Root Bros., Co., Plymouth, O.—Lawn Mowers.
Rosenthal Corn Husker Co., Milwaukee, Wis.—Huskers and Shredders.
Ross, Chas., & Son, 16 Steuben St., Brooklyn, N. Y.—Grinding Mills, Bolters, etc.
Ross, E. W., Co., Springfield, O.—Feed Cutters, Horse Powers, etc.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.—Cultivators, Harvesters, etc.
Rude Bros., Mfg. Co., Liberty, Ind.—Cultivating Machinery.
Rumely, M., Co., La Porte, Ind.—Threshers, Stackers, etc.
Rumsey & Co., Ltd., Seneca Falls, N. Y.—Corn Shellers.
Russell & Co., Massillon, O.—Threshers, Feeders, etc.
Russell Wind Stacker Co., Indianapolis, Ind.—Stackers.
Ruth Self Feeder Mfg. Co., Halstead, Kan.—Self Feeders, Hay Carriers.
Safety Shredder Co., New Castle, Ind.—Shredders, etc.
St. Albans Fdry. & Implement Co., St. Albans, Vt.—Threshers, Cutters.
St. Joseph Plow Co., St. Joseph, Mo.—Cultivators, etc.
Salem Machine Works, Salem, Va.—Roller Mills, Bolters, etc.
Salzman Mfg. Co., Hamilton, O.—Fanning Mills, etc.
Sanders, Newell Plow Co., Chattanooga, Tenn.—Plows.
Sandwich Mfg. Co., Sandwich, Ill.—Self Feeders, Horse Powers, etc.
Schutz-O'Neill Co., Minneapolis, Minn.—Roller Mills.
Sechler, D. M., Carriage Co., Moline, Ill.—Cultivating Machinery.
Seiberling & Miller, Doylestown, O.—Harvesters, Binders, etc.
Selby, Starr & Co., Peoria, Ill.—Drills, Sowers, etc.
Sheffield Mfg. Co., Burr Oak, Mich.—Corn Planters.
Shunk Plow Co., Bucyrus, O.—Plows.
Side Delivery Buncher Co., Toledo, O.—Clover Bunchers.
Silver Mfg. Co., Salem, O.—Fodder Shredders, etc.
Sioux City Plow Co., Sioux City, Ia.—Cultivators.
Smalley Mfg. Co., Manitowoc, Wis.—Grinding Mills, Plows, etc.
Smith Manure Spreader Co., 16 S. Clinton St., Chicago, Ill.—Fertilizer Distributors.
Smith, Seymour, & Son, Oakville, Conn.—Pruning Implements.
Snow Mfg. Co., Batavia, Ill.—Corn Shellers, Horse Powers, etc.
South Bend Chilled Plow Co., South Bend, Ind.—Plows.
South Bend Spark Arrester Co., South Bend, Ind.—Bagging Machines.
Southern Plow Co., Columbus, Ga.—Cultivators, Planters, etc.
Spangler Mfg. Co., York, Pa.—Cultivating Machinery, etc.
Sprout, Waldron & Co., Muncy, Pa.—Grinding Mills, Bolters, etc.
Standard Harrow Co., Utica, N. Y.—Cultivating Machinery.
Star Mfg. Co., 75 Depot St., New Lexington, O.—Grinding Mills.
Star Pea Machine Co., Chattanooga, Tenn.—Pea Hullers, etc.
Star Seeder Co., Shortsville, N. Y.—Seed Sowers.
Starr, B. F., & Co., North & Centre Sts., Baltimore, Md.—Roller Mills.
Stearns, E. C., & Co., Syracuse, N. Y.—Grinding Mills, etc.
Stedman Foundry & Machine Works, Aurora, Ind.—Grinding Mills.
Sterling Mfg. Co., Sterling, Ill.—Planters, Potato Diggers, etc.
Stevens, A. W., Co., Marinette, Wis.—Threshers, Stackers, etc.
Stickney, Charles A., Co., St. Paul, Minn.—Buhr Mills.
Stoddard Mfg. Co., Dayton, O.—Cultivating Machinery, etc.
Stover Mfg. Co., Freeport, Ill.—Grinding Mills.
Stratton Mfg. Co., Erie, Pa.—Grinding Mills.
Straub, A. W., Co., 3737 Filbert St., Philadelphia, Pa.—Grinding Mills.
Straub Machinery Co., Storrs Station, Cincinnati, O.—Bolting Reels.
Sturtevant Mill Co., Harrison Square, Boston, Mass.—Grinding Mills.
Sucker State Drill Co., Belleville, Ill.—Drills, Sowers, etc.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.—Corn Crushers.

Sutton, Frank, Arthur, Ill.—Broom Corn Harvesters.
Swanson Mfg. Co., Shenandoah, Ia.—Cultivators.
Syracuse Chilled Plow Co., Syracuse, N. Y.—Plows, Hay Carriers, etc.
Tait, F. B., Mfg. Co., Decatur, Ill.—Cultivating Machinery, Listers, etc.
Thomas Mfg. Co., Springfield, O.—Drills, Sowers, etc.
Thompson, J., & Sons, Mfg. Co., Beloit, Wis.—Cultivating Machinery.
Toledo Plow Co., Toledo, O.—Plows, Sowers, etc.
Towers-Sullivan Mfg. Co., Rome, Ga.—Plows.
Twin City Separator Co., Colfax Ave. S. & 29th St., Minneapolis, Minn. Fanning Mills, etc.
Union Corn Planter Co., Peoria, Ill.—Corn Planters, etc.
Union Iron Works, Decatur, Ill.—Grain Cleaning Machines.
Utica Tool Co., Utica, N. Y.—Implements.
Van Brunt & Wilkins Mfg. Co., Horicon, Wis.—Cultivators, Sowers, etc.
Van Wye Adjustable Sieve Co., Wichita, Kan.—Sieves.
Victor Heater Co., Minneapolis, Minn.—Grain Driers.
Vulcan Iron Works, Wilkesbarre, Pa.—Corn Crushers.
Vulcan Plow Co., Evansville, Ind.—Plows.
Wadsworth, David, & Son, Auburn, N. Y.—Implements.
Wagner Plow Co., Indianapolis, Ind.—Plows.
Walker & Elliott, Wilmington, Del.—Bolters, Mixers, etc.
Walton, P. M., 1023-1025 Germantown Ave., Philadelphia, Pa.—Buhr Mills.
Wave System Bolting Co., Dayton, O.—Flour Dressers.
Wayne Works, Richmond, Ind.—Drills, Planters, etc.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.—Grain Samplers, etc.
Western Wheeled Scraper Co., Aurora, Ill.—Steam Plows.
Westinghouse Co., Schenectady, N. Y.—Threshers, Horse Powers, etc.
Wheeler & Melick Mchy. Co., Frankfort, N. Y.—Cultivators, Threshers.
Whitehurst, R. W., & Co., Norfolk, Va.—Corn Shellers, Plows, etc.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.—Sowers, Root Cutters, etc.
Whitman & Barnes Mfg. Co., Akron, O.—Cultivators, Planters, etc.
Wiard Plow Co., Batavia, Ill.—Harvesters, Plows, etc.
Wilder-Strong Implement Co., Monroe, Mich.—Grinding Mills, Plows.
Williams Mfg. Co., Decatur, Ill.—Planters, Bagging Machines, etc.
Wilson Bros., Easton, Pa.—Grinding Mills, etc.
Wisconsin Corn Feeder Co., 33-34 Tenney Blk., Madison Wis.—Band Cutters, Feeders, etc.
Withington & Cooley Mfg. Co., Jackson, Mich.—Implements.
Wolf Co., Chambersburg, Pa.—Grinding Mills, Bolters, etc.
Wood, Walter A., Hoosick Falls, N. Y.—Harvesting Machinery, etc.
Wood Bros., Steel Self Feeder Co., Des Moines, Ia.—Band Cutters and Feeders.
Woodcock Feed Mill Co., Chillicothe, O.—Grinding Mills.
Ypsilanti Machine Works, Ypsilanti, Mich.—Roller Mills, Flour Dressers.

AGRICULTURAL MACHINERY.

1 **BAGGING, WEIGHING AND LOADING MACHINES.**

Advance Thresher Co., Battle Creek, Mich.
Ames Plow Co., Quincy Hall, Boston, Mass.
Aultman Co., Canton, O.
Aultman & Taylor Mchy. Co., Mansfield, Ohio.
Automatic Weighing Machine Co., Green & Bay Sts., Jersey City, N. J.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Belle City Mfg. Co., Racine Junction, Wis.
Bowen & Quick, Auburn, N. Y.
Bowsher, N. P., Co., South Bend, Ind.
Buffalo Pitts Co., 20 Carolina St., Buffalo, N. Y.
Case, J. I., Threshing Machine Co., Racine, Wis.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Eaton, W. T., Mfg. Co., 4 Sherman St., Chicago, Ill.
Gaar, Scott, & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.
Hart Grain Weigher Co., Peoria, Ill.
Huber Mfg. Co., Marion, O.
Hydraulic Press Mfg. Co., 155 Main St., Mt. Gilead, O.
Kingsland Mfg. Co., 1521 No. 11th St., St. Louis, Mo.
Marion Mfg. Co., Marion, O.
Messinger Mfg. Co., Tatamy, Pa.
Minneapolis Threshing Machine Co., W. Minneapolis, Minn.
New England Automatic Weighing Machine Co., 275 Congress St., Boston, Mass.
Nichols & Shepard Co., Battle Creek, Mich.
Northwest Thresher Co., Stillwater, Minn.
Pneumatic Elevator & Weigher Co., 165 E. Morris St., Indianapolis, Ind.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Reeves & Co., Columbus, Ind.
Robinson, & Co., Richmond, Ind.
Rumely, M., Co., La Porte, Ind.
South Bend Spark Arrester Co., South Bend, Ind.
Sprout, Waldron, & Co., Muncy, Pa.
Stevens, A. W., Co., Marinette, Wis.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.
Westinghouse Co., Schenectady, N. Y.
Williams Mfg. Co., Decatur, Ill.

2 **BINDERS.** For binding grain into sheaves.

Adriance, Platt & Co., Poughkeepsie, N. Y.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Johnston Harvester Co., Batavia, N. Y.
Osborne, D. M., & Co., Auburn, N. Y.
Seiberling & Miller, Doylestown, Ohio.
Wood, Walter A., Hoosick Falls, N. Y.

3 **BUNCHERS, CLOVER.**

American Buncher Co., Indianapolis, Ind.
Side Delivery Buncher Co., Toledo, O.

4 CARRIERS, HAY.

American Seeding Machine Co., Springfield, O.
Appleton Mfg. Co., Batavia, Ill.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.
Collins Plow Co., Quincy, Ill.
Dick, Joseph, Agricultural Works, Canton, O.
Eagle Machine Co., Lancaster, O.
Eddy, W., Plow Co., Greenwich, N. Y.
Eureka Mower Co., Utica, N. Y.
Hunt, Helm & Ferris, Harvard, Ill.
Jackson, Byron, Machine Works, 625 6th St., San Francisco, Cal.
Janesville Machine Co., Janesville, Wis.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Keystone Mfg. Co., Sterling, Ill.
Law Mfg. Co., Merriam Park, St. Paul, Minn.
Louden Machinery Co., Fairfield, Iowa.
Monarch Feeder & Stacker Co., Cedar Falls, Iowa.
Myers, F. E., & Bros., Ashland, O.
Ney Mfg. Co., Canton, O.
Porter, J. E., Co., Ottawa, Ill.
Red Jacket Mfg. Co., Davenport, Ia.
Robinson & Co., Richmond, Ind.
Ross, E. W., Co., Springfield, O.
Ruth Self Feeder Mfg. Co., Halstead, Kans.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Whitman & Barnes Mfg. Co., Akron, O.
Wilder-Strong Implement Co., Monroe, Mich.

5 CLIPPERS. For dehorning cattle.

Fargo Creamery Supply House, Lake Mills, Wis.
Leavitt Mfg. Co., Urbana, Ill.
Phillips, M. T., Pomeroy, Pa.

6 CRUSHERS, CLOD. Toothed or rough faced rollers for breaking clods in a field.

Ames Plow Co., Quincy Hall, Boston, Mass.
Brown, Geo. W., & Co., Galesburg, Ill.
Dunham, J. W., & Son, Berea, O.
Hobson & Co., 17 State St., New York.
Lehr Agricultural Co., Fremont, O.
Nash, Duane H., Millington, N. J.
Parlin & Orendorff, Co., Canton, Ill.

7 Pulverizers, Soil.

Carnegie Plow & Mfg. Co., Carnegie, Pa.
Chamberlin Rider Mfg. Co., Hudson, Mich.
Deuscher, H. P., Co., Hamilton, O.
Dunham, J. W., & Son, Berea, O.
Farquhar, A. B., Co., Ltd., York, Pa.
Hickox, Mull & Hill Co., Toledo, O.
Macgowan & Finigan Foundry & Machine Co., St. Louis, Mo.
Moline Plow Co., Moline, Ill.
Racine-Sattley Mfg. Co., Springfield, Ill.
Walker & Elliott, Wilmington, Del.

8 **CULTIVATORS.** For cultivating standing crops; commonly having several shares, sweeps or blades, which loosen the ground and destroy weeds.

Akron Cultivator Co., Akron, O.
Allen, S. L., & Co., 1107 Market St., Philadelphia, Pa.
American Harrow Co., Detroit, Mich.
Ames Plow Co., Quincy Hall, Boston, Mass.
Atlanta Agricultural Works, Atlanta, Ga.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.
Avery, B. F., & Sons, Louisville, Ky.
Babcock Mfg. Co., Leonardsville, N. Y.
Baker & Hamilton, San Francisco, Cal.
Bateman Mfg. Co., Grenloch, N. J.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Bement's, E., Sons, Lansing, Mich.
Bradley, David, Mfg. Co., Bradley, Ill.
Brinly-Hardy Co., Louisville, Ky.
Brown, Geo. W., & Co., Galesburg, Ill.
Brown Mfg. Co., Zanesville, O.
Brown-Manly Plow Co., Malta, O.
Bucher & Gibbs Plow Co., Canton, O.
Buffalo Pitts Co., 20 Carolina St., Buffalo, N. Y.
Case, J. I., Threshing Machine Co., Racine, Wis.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Chamberlin Rider Mfg. Co., Hudson, Mich.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.
Clipper Chilled Plow Co., Elmira, N. Y.
Clipper Plow Co., Defiance, O.
Collins Plow Co., Quincy, Ill.
Deere, & Co., Moline, Ill.
Deere & Mansur Co., Moline, Ill.
Dempster Mill Mfg. Co., Beatrice, Neb.
Deuscher, H. P., Co., Hamilton, O.
Donaldson Bros., Mt. Clemens, Mich.
Eagle Mfg. Co., Kansas City, Mo.
Eddy, W., Plow Co., Greenwich, N. Y.
Emerson Mfg. Co., Rockford, Ill.
Eureka Mower Co., Utica, N. Y.
Everitt, J. A., 227 W. Washington St., Indianapolis, Ind.
Farquhar, A. B., Co., Ltd., York, Pa.
Fountain City Drill Co., La Crosse, Wis.
Fuller & Johnson Mfg. Co., Madison, Wis.
Gale Mfg. Co., Albion, Mich.
Gowanda Agricultural Works, Gowanda, N. Y.
Grand Detour Plow Co., Dixon, Ill.
Hapgood Plow Co., Alton, Ill.
Hartman Mfg. Co., Vincennes, Ind.
Hayes Pump & Planter Co., Galva, Ill.
Hench & Dromgold Co., York, Pa.
Hercules Mfg. Co., Centerville, Ia.
Hobson & Co., 17 State St. New York.
Hoke Mfg. Co., Frankfort, Ind.
Hussey Plow Co., Berwick, Me.
Janesville Machine Co., Janesville, Wis.
Johnston Harvester Co., Batavia, N. Y.
Keller Mfg. Co., Sauk Ventre, Minn.
Keystone Farm Machine Co., York, Pa.
Keystone Mfg. Co., Sterling, Ill.

CULTIVATORS, continued

King & Hamilton Co., Ottawa, Ill.
Kingman & Co., Peoria, Ill.
La Crosse Plow Co., La Crosse, Wis.
Lehr Agricultural Co., Fremont, O.
Mast, P. P., & Co., Springfield, O.
Messinger Mfg. Co., Tatamy, Pa.
Mishawaka Plow Co., Mishawaka, Ind.
Moline Plow Co., Moline, Ill.
Morrison Mfg. Co., Ft. Madison, Ia.
Munnsville Plow Co., Munnsville, N. Y.
Ohio Cultivator Co., Bellevue, O.
Ohio Rake Co., Dayton, O.
Osborne, D. M., & Co., Auburn, N. Y.
Parlin & Orendorff Co., Canton, Ill.
Pekin Plow Co., Pekin, Ill.
Peru Plow & Wheel Co., Peru, Ill.
Racine-Sattley Mfg. Co., Springfield, Ill.
Reed Mfg. Co., Kalamazoo, Mich.
Richmond Plow Co., Richmond, Ind.
Rock Island Plow Co., Rock Island, Ill.
Rockford Mfg. Co., Rockford, Ill.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Rude Bros., Mfg. Co., Liberty, Ind.
St. Joseph Plow Co., St. Joseph, Mo.
Sechler, D. M., Carriage Co., Moline, Ill.
Sioux City Plow Co., Sioux City, Ia.
Southern Plow Co., Columbus, Ga.
Spangler Mfg. Co., York, Pa.
Standard Harrow Co., Utica, N. Y.
Stoddard Mfg. Co., Dayton, O.
Swanson Mfg. Co., Shenandoah, Iowa.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Tait, F. B., Mfg. Co., Decatur, Ill.
Thompson, J., & Sons, Mfg. Co., Beloit, Wis.
Toledo Plow Co., Toledo, O.
Van Brunt & Wilkins Mfg. Co., Horicon, Wis.
Wheeler & Melick Machinery Co., Frankfort, N. Y.
Whitman & Barnes Mfg. Co., Akron, O.

9 **CUTTERS, BAND.** Threshing machine attachments for cutting the bindings of bundles of grain.

Aultman Co., Canton, O.
Farquhar, A. B., Co., Ltd., York, Pa.
Gaar, Scott & Co., Richmond, Ind.
Heine Mfg. Co., Wahpeton, N. Dak.
Minneapolis Threshing Machine Co., W. Minneapolis, Minn.
Monarch Feeder & Stacker Co., Cedar Falls, Ia.
Morley Self Feeder Co., Sioux City, Ia.
National Machine Co., Columbus, Ind.
Parson's Band Cutter & Self Feeder Co., Newton, Ia.
Parsons-Rich, & Co., Newton, Ia.
Rumely, M., Co., La Porte, Ind.
Ruth Self Feeder Mfg. Co., Halstead, Kans.
Wisconsin Corn Feeder Co., Madison, Wis.
Wood Bros. Steel Self Feeder Co., Des Moines, Iowa.

10 **Clover.** For cutting clover and other grasses, herbs, etc., suitable for feeding to poultry.

CUTTERS, CLOVER, continued

Excel Mfg. Co., Pottersville, N. J.
Humphrey, & Sons, Joliet, Ill.
Mann, F. W., Co., Milford, Mass.
Wilson Bros., Easton, Pa.

11 **Corn.**

Clipper Plow Co., Defiance, O.
Dain Mfg. Co., Ottumwa, Ia.
Foos Mfg. Co., Springfield, O.

12 **Feed.**

American Seeding Machine Co., Springfield, O.
Ames Plow Co., Quincy Hall, Boston, Mass.
Appleton Mfg. Co., Batavia, Ill.
Babcock Mfg. Co., Leonardsville, N. Y.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Belle City Mfg. Co., Racine Junction, Wis.
Buch's, A., Sons, Elizabethtown, Pa.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Childs, Chas. H., & Co., 12 Lafayette St., Utica, N. Y.
Comstock, Geo. S., Mechanicsburg, Pa.
Conner, J. W., Orangeville, Pa.
Dain Mfg. Co., Ottumwa, Ia.
Daniels Machine Co., Woodstock, Vt.
Dick, Joseph, Agricultural Works, Canton, O.
Eagle Machine Co., Lancaster, O.
Eddy, W., Plow Co., Greenwich, N. Y.
Edwards, M. L., Co., Salem, O.
Ellis Keystone Agricultural Works, Pottstown, Pa.
Eureka Mower Co., Utica, N. Y.
Flint & Walling Mfg. Co., Kendallville, Ind.
Foster & Williams Mfg. Co., Racine, Wis.
Gowanda Agricultural Works, Gowanda, N. Y.
Gray's, A. W., Sons, Middletown Springs, Vt.
Heebner, & Sons, Lansdale, Pa.
Hench & Dromgold, Co., York, Pa.
Hirsch Bros., 267 Reed St., Milwaukee, Wis.
Hobson, & Co., 17 State St., New York.
Hocking Valley Mfg. Co., Lancaster, O.
Keystone Farm Machine Co., York, Pa.
Lehr Agricultural Co., Fremont, O.
Marseilles Mfg. Co., Marseilles, Ill.
Merrill Iron Works, Merrill, Wis.
Messinger Mfg. Co., Tatamy, Pa.
Mountville Mfg. Co., Mountville, Pa.
Papec Machine Co., Lima, N. Y.
Ross, E. W., Co., Springfield, O.
St. Albans Foundry & Implement Co., St. Albans, Vt.
Silver Mfg. Co., Salem, O.
Smalley Mfg. Co., Manitowoc, Wis.
Spangler Mfg. Co., York, Pa.
Wayne Works, Richmond, Ind.
Whitman Agr. Co., 6900 S. Broadway, St. Louis, Mo.
Wilder-Strong Implement Co., Monroe, Mich.
Wilson Bros., Easton, Pa.

CUTTERS, FEED, continued

13 **Hay.**

Buch's, A., Sons, Elizabethtown, Pa.
Hobson, & Co., 17 State St., New York.
Keystone Farm Machine Co., York, Pa.

14 **Potato.**

Aspinwall Mfg. Co., Jackson, Mich.
Dowden Mfg. Co., Prairie City, Ia.

15 **Root.**

Ames Plow Co., Quincy Hall, Boston, Mass.
Belle City Mfg. Co., Racine Junction, Wis.
Buch's, A., Sons, Elizabethtown, Pa.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Cutaway Harrow Co., Higganum, Conn.
Donaldson Bros., Mt. Clemens, Mich.
Eddy, W., Plow Co., Greenwich, N. Y.
Excel Mfg. Co., Pottersville, N. J.
Grand Detour Plow Co., Dixon, Ill.
Smalley Mfg. Co., Manitowoc, Wis.
Whitehurst, R. W., & Co., Norfolk, Va.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.

16 **Stalk.**

Ames Plow Co., Quincy Hall, Boston, Mass.
Appleton Mfg. Co., Batavia, Ill.
Atlanta Agricultural Works, Atlanta, Ga.
Avery, B. F., & Sons, Louisville, Ky.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.
Belle City Mfg. Co., Racine Junction, Wis.
Bradley, David, Mfg. Co., Bradley, Ill.
Brown, Geo. W., & Co., Galesburg, Ill.
Brown Mfg. Co., Zanesville, O.
Case, J. I., Threshing Machine Co., Racine, Wis.
Deere & Mansur Co., Moline, Ill.
Eagle Mfg. Co., Kansas City, Mo.
Fuller & Johnson Mfg. Co., Madison, Wis.
Gale Mfg. Co., Albion, Mich.
Grand Detour Plow Co., Dixon, Ill.
Hartman Mfg. Co., Vincennes, Ind.
Kingman, & Co., Peoria, Ill.
Lehr Agricultural Co., Fremont, O.
Moline Plow Co., Moline, Ill.
Ohio Cultivator Co., Bellevue, O.
Parlin & Orendorff Co., Canton, Ill.
Pekin Plow Co. Pekin, Ill.
Peru Plow & Wheel Co., Peru, Ill.
Rock Island Plow Co., Rock Island, Ill.
St. Albans Foundry & Implement Co., St. Albans, Vt.
St. Joseph Plow Co., St. Joseph, Mo.
Selby, Starr, & Co., Peoria, Ill.
Sterling Mfg. Co., Sterling, Ill.
Sucker State Drill Co., Belleville, Ill.

17 **CUTTERS AND SHREDDERS, FODDER.**

Appleton Mfg. Co., Batavia, Ill.

CUTTERS AND SHREDDERS, FODDER, continued

Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Deere & Mansur Co., Moline, Ill.
Dick, Joseph, Agricultural Works, Canton, O.
Eagle Manchine Co., Lancaster, O.
Harrison, W. R., & Co., Massillon, O.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Janney Mfg. Co., Ottumwa, Ia.
New Birdsall Co., Auburn, N. Y.
Ross, E. W., Co., Springfield, O.
Safety Shredder Co., New Castle, Ind.
St. Albans Foundry & Implement Co., St. Albans, Vt.
Silver Mfg. Co., Salem, O.
Smalley Mfg. Co., Manitowoc, Wis.
Star Pea Machine Co., Chattanooga, Tenn.
Stevens, A. W., Co., Marinette, Wis.
Wilder-Strong Implement Co., Monroe, Mich.

18 **DIGGERS, BEET.**

Avery, B. F., & Sons, Louisville, Ky.
Bucher & Gibbs Plow Co., Canton, O.

19 **Post Hole.**

Aspinwall Mfg. Co., Jackson, Mich.
Brown Mfg. Co., Zanesville, Ohio.
Disston, Henry, & Sons, Tacony and N. Front Sts., Philda, Pa.
Herschell, R., Mfg. Co., Peoria, Ill.
Iwan Bros., Streator, Ill.
Miller Anchor Co., Norwalk, Ohio.
Ney Mfg. Co., Canton, Ohio.
Ohio Cultivator Co., Bellevue, Ohio.
Whitman & Barnes Mfg. Co., Akron, O.

20 **Potato.**

Allen, S. L., & Co., 1107 Market St., Philadelphia, Pa.
Aspinwall Mfg. Co., Jackson, Mich.
Avery, B. F., & Sons, Louisville, Ky.
Baker & Hamilton San Francisco, Cal.
Bradley, David, Mfg. Co., Bradley, Ill.
Doughten, H. W, Moorestown, N. J.
Dowden Mfg. Co., Prairie City, Ia.
Gowanda Agricultural Works, Gowanda, N. Y.
Hallock, D. Y., & Sons, 24 York St., York, Pa.
Hirsch Bros., 267 Reed St., Milwaukee, Wis.
Hoover-Prout Co., Avery, O.
Moline Plow Co., Moline, Ill.
Parlin & Orendorff Co., Canton, Ill.
Peek, S. H., East Aurora, N. Y.
Peru Plow & Wheel Co., Peru, Ill.
Rock Island Plow Co., Rock Island, Ill.
Standard Harrow Co., Utica, N. Y.
Sterling Mfg. Co., Sterling, Ill.

21 **DISTRIBUTORS, FERTILIZER.** For spreading the fertilizer evenly.

American Seeding Machine Co., Springfield, O.
Aspinwall Mfg. Co., Jackson, Mich.

DISTRIBUTORS, FERTILIZER, continued

Atlanta Agricultural Works, Atlanta, Ga.
Avery, B. F., & Sons, Louisville, Ky.
Bateman Mfg. Co., Grenloch, N. J.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Bement's, E., Sons, Lansing, Mich.
Campbell Corn Drill Co., Harrison, O.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.
Clipper Plow Co., Defiance, Ohio.
Cortland Implement Co., Cortland, N. Y.
Crown Mfg. Co., Phelps, N. Y.
Dempwolf, C. H., & Co., York, Pa.
Deuscher, H. P., Co., Hamilton, Ohio.
Dowagiac Mfg. Co., Dowagiac, Mich.
Farquhar, A. B., Co., Ltd., York, Pa.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Gill, J. H., Raleigh, N. C.
Hayes Pump & Planter Co, Galva, Ill.
Kemp & Burpee Mfg. Co., Syracuse, N. Y.
Kemp, J. S., Mfg. Co., Newark Valley, N. Y.
Keystone Farm Machine Co., York, Pa.
McSherry Mfg. Co., Middletown, Ohio.
McWhorter Mfg. Co., Riverton, N. J.
Mast, P. P., & Co., Springfield, O.
Newark Machine Co., Newark, Ohio.
Ohio Cultivator Co., Bellevue, Ohio.
Ontario Drill Co., Despatch, N. Y.
Richardson Mfg. Co., Worcester, Mass.
Rock Island Plow Co., Rock Island, Ill.
Rude Bros. Mfg. Co., Liberty, Ind.
Selby, Starr, & Co., Peoria, Ill.
Smith Manure Spreader Co., 16 S. Clinton St., Chicago, Ill.
Spangler Mfg. Co., York, Pa.
Sucker State Drill Co., Belleville, Ill.
Wayne Works, Richmond, Ind.

22 **DRILLS.** For planting seed several rows at one operation, as distinguished from broadcast seeding.

American Seeding Machine Co., Springfield, Ohio.
Ames Plow Co., Quincy Hall, Boston, Mass.
Avery, B. F., & Sons, Louisville, Ky.
Cassopolis Mfg. Co., Cassopolis, Mich.
Chambers, Bering, Quinlan Co., Decatur, Ill.
Deere & Mansur Co., Moline, Ill.
Deuscher, H. P., Co., Hamilton, O.
Doughten, H. W., Moorestown, N. J.
Eagle Mfg. Co., Kansas City, Mo.
Everitt, J. A., 227 W. Washington St., Indianapolis, Ind.
King & Hamilton Co., Ottawa, Ill.
La Crosse Plow Co., La Crosse, Wis.
McWhorter Mfg. Co., Riverton, N. J.
Moline Plow Co., Moline, Ill.
Peru Plow & Wheel Co., Peru, Ill.
Racine-Sattley Mfg. Co., Springfield, Ill.
Stoddard Mfg. Co., Dayton, Ohio.
Thomas Mfg. Co., Springfield, Ohio.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.

DRILLS, continued

23 **Disc.**

American Seeding Machine Co., Springfield, Ohio.
Chambers, Bering, Quinlan Co., Decatur, Ill.
Childs, Chas. H., & Co., 12 Lafayette St., Utica, N. Y.
Deere & Mansur Co., Moline, Ill.
Dempster Mill Mfg. Co., Beatrice, Neb. „
Farquhar, A. B., Co., Ltd., York, Pa.
Fountain City Drill Co., La Crosse, Wis.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Haworth & Sons Mfg. Co., Decatur, Ill.
La Crosse Plow Co., La Crosse, Wis.
McSherry Mfg. Co., Middletown, Ohio.
Mast, P. P., & Co., Springfield, Ohio.
Monitor Drill Co., Minneapolis, Minn.
Ohio Rake Co., Dayton, O.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Rude Bros. Mfg. Co., Liberty, Ind.
Selby, Starr & Co., Peoria, Ill.
Spangler Mfg. Co., York, Pa.
Sucker State Drill Co., Belleville, Ill.
Van Brunt & Wilkins Mfg. Co., Horicon, Wis.
Wayne Works, Richmond, Ind.

24 **Hoe.**

Allen, S. L., & Co., 1107 Market St., Philadelphia, Pa.
American Seeding Machine Co., Springfield, O.
Ames Plow Co., Quincy Hall, Boston, Mass.
Babcock Mfg. Co., Leonardsville, N. Y.
Bateman Mfg. Co., Grenloch, N. J.
Bement, E., & Sons, Lansing, Mich.
Childs, Chas. H., & Co., 12 Lafayette St., Utica, N. Y.
Crown Mfg. Co., Phelps, N. Y.
Dowagiac Mfg. Co., Dowagiac, Mich.
Everitt, J. A., 227 W. Washington St., Indianapolis, Ind.
Farquhar, A. B., Co., Ltd., York, Pa.
Fountain City Drill Co., La Crosse, Wis.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Haworth & Sons Mfg. Co., Decatur, Ill.
Janesville Machine Co., Janesville, Wis.
La Crosse Plow Co., La Crosse, Wis.
McSherry Mfg. Co., Middletown, Ohio.
Mast, P. P., & Co., Springfield, Ohio.
Monitor Drill Co., Minneapolis, Minn.
Ontario Drill Co., Despatch, N. Y.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Rude Bros. Mfg. Co., Liberty, Ind.
Sechler, D. M., Carriage Co., Moline, Ill.
Selby, Starr & Co., Peoria, Ill.
Sucker State Drill Co., Belleville, Ill.
Van Brunt & Wilkins Mfg. Co., Horicon, Wis.
Wayne Works, Richmond, Ind.
Whitman & Barnes Mfg. Co., 111 Chambers St., New York.

25 **Runner Press.**

American Seeding Machine Co., Springfield, O.
Campbell Corn Drill Co., Harrison, Ohio.

DRILLS, RUNNER PRESS, continued

Cash Supply & Mfg. Co., Kalamazoo, Mich.
Chambers, Bering, Quinlan Co., Decatur, Ill.
Ohio Rake Co., Dayton, O.
Parlin & Orendorff Co., Canton, Ill.
Sechler, D. M., Carriage Co., Moline, Ill.
Selby, Starr & Co., Peoria, Ill.
Stoddard Mfg. Co., Dayton, Ohio.
Sucker State Drill Co., Belleville, Ill.
Wayne Works, Richmond Ind.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.

26 **Shoe.**

American Seeding Machine Co., Springfield, Ohio.
Baker & Hamilton, San Francisco, Cal.
Bement's, E., Sons, Lansing, Mich.
Bradley, David, Mfg. Co., Bradley, Ill.
Brown, Geo. W., & Co., Galesburg, Ill.
Campbell Corn Drill Co., Harrison, Ohio.
Dowagiac Mfg. Co., Dowagiac, Mich.
Farquhar, A. B., Co., Ltd., York, Pa.
Fountain City Drill Co., La Crosse Wis.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Haworth & Sons Mfg. Co. Decatur, Ill.
Hayes Pump & Planter Co., Galva, Ill.
La Crosse Plow Co., La Crosse, Wis.
McSherry Mfg. Co., Middletown, Ohio.
Mast, P. P., & Co., Springfield, Ohio.
Monitor Drill Co., Minneapolis, Minn.
Rock Island Plow Co., Rock Island, Ill.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Sechler, D. M., Carriage Co., Moline, Ill.
Selby, Starr & Co., Peoria, Ill.
Sucker State Drill Co., Belleville, Ill.
Van Brunt & Wilkins Mfg. Co., Horicon, Wis.
Wayne Works, Richmond, Ind.

27 **FEEDERS.** For supplying material to threshing machines, grinding mills, etc.

Admiral Hay Press Co., Kansas City, Mo.
Advance Thresher Co., Battle Creek, Mich.
American Shredder Co., Madison, Wis.
Aultman Co., Canton, Ohio.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.
Barker Feeder Co., Racine, Wis.
Birdsell Mfg. Co., South Bend, Ind.
Case, J. I., Threshing Machine Co., Racine, Wis.
Dempster Mill Mfg. Co., Beatrice, Neb.
Farquhar, A. B., Co., Ltd., York, Pa.
Gaar, Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.
Heine Mfg. Co., Wahpeton. N. Dak.
Huber Mfg. Co., Marion, Ohio.
Jackson, Byron Machine Works, 625 6th St., San Francisco, Cal.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.
Minneapolis Threshing Machine Co., W. Minneapolis, Minn.
Monarch Feeder & Stacker Co., Cedar Falls, Iowa.

FEEDERS, continued

Morley Self Feeder Co., Sioux City, Iowa.
National Machine Co., Columbus, Ind.
New Birdsall Co., Auburn, N. Y.
Nichols & Shepard Co., Battle Creek, Mich.
Parsons-Rich & Co., Newton, Iowa.
Robinson & Co., Richmond, Ind.
Rumely, M., Co., La Porte, Ind.
Russell & Co., Massillon, Ohio.
Ruth Self Feeder Mfg. Co., Halstead, Kan.
Sandwich Mfg. Co., Sandwich, Ill.
Stevens, A. W., Co., Marinette, Wis.
Wisconsin Corn Feeder Co., Madison, Wis.
Wood Bros. Steel Self Feeder Co., Des Moines, Iowa.

28 **GRAIN CLEANING MACHINES.** See 81, Flour Mill Machinery List.

29 **GRINDING MACHINES, FRUIT.**

Ames Plow Co., Quincy Hall, Boston, Mass.
Bushnell, G. H., Press Co., Thompsonville, Conn.
Klotz Machine Co., Sandusky, O.

30 **HARROWS, DISC AND TOOTH.** For leveling and pulverizing the soil; also for covering the seed.

Adriance, Platt & Co., Poughkeepsie, N. Y.
American Harrow Co., Detroit, Mich.
American Seeding Machine Co., Springfield, Ohio.
Ames Plow Co., Quincy Hall, Boston, Mass.
Atlanta Agricultural Works, Atlanta, Ga.
Avery, B. F., & Sons, Louisville, Ky.
Babcock Mfg. Co., Leonardsville, N. Y.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Bement's, E., Sons, Lansing, Mich.
Benicia Agricultural Works, Benicia, Cal.
Brown, Geo. W. & Co., Galesburg, Ill.
Brown-Manly Plow Co., Malta, Ohio.
Buch's, A., Sons, Elizabethtown, Pa.
Bucher & Gibbs Plow Co., Canton, Ohio.
Chamberlin Rider Mfg. Co., Hudson, Mich.
Coffeyville Implement & Mfg. Co., Coffeyville, Kan.
Collins Plow Co., Quincy, Ill.
Cutaway Harrow Co., Higganum, Conn.
Daley, M. H., Charles City, Iowa.
Deere & Mansur Co., Moline, Ill.
Deere & Co., Moline, Ill.
Deuscher, H. P., Co., Hamilton, Ohio.
Donaldson Bros, Mt. Clemens, Mich.
Dowden Mfg. Co., Prairie City, Iowa.
Eagle Mfg. Co., Kansas City, Mo.
Eddy, W., Plow Co., Greenwich, N. Y.
Emerson Mfg Co., Rockford, Ill.
Farquhar, A. B., Co., Ltd., York, Pa.
Fountain City Drill Co., La Crosse, Wis.
Fuller & Johnson Mfg. Co., Madison, Wis.
Gale Mfg. Co., Albion, Mich.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Grand Detour Plow Co., Dixon, Ill

HARROWS, continued

Hapgood Plow Co., Alton, Ill.
Hayes Pump & Planter Co., Galva, Ill.
Heebner & Sons, Lansdale, Pa.
Hench & Dromgold Co., York, Pa.
Hobson & Co., 17 State St., New York.
Hoke Mfg. Co., Frankfort, Ind.
Hussey Plow Co., Berwick, Maine.
Jackson, Byron Machine Works, 625 6th St., San Francisco, Cal.
Johnston Harvester Co., Batavia, N. Y.
Keller Mfg. Co., Sauk Centre, Minn.
Keystone Farm Machine Co., York, Pa.
Keystone Mfg. Co., Sterling, Ill
Kingman & Co., Peoria, Ill.
La Crosse Plow Co., La Crosse, Wis.
Law Mfg. Co., Merriam Park, St. Paul, Minn.
Lean, Roderick, Mfg. Co., Mansfield, Ohio.
Lehr Agricultural Co., Fremont, Ohio.
Luthy & Co., 318 S. Water St., Peoria, Ill.
McSherry Mfg. Co., Middletown, Ohio.
Macgowan & Finigan Foundry & Machine Co., St. Louis, Mo.
Moline Plow Co., Moline, Ill.
Morrison Mfg. Co., Ft. Madison, Iowa.
Mountville Mfg. Co., Mountville, Pa.
Nash, Duane H., Millington, N. J.
Ohio Cultivator Co., Bellevue, Ohio.
Ohio Rake Co., Dayton, O.
Osborne, D. M., & Co., Auburn, N. Y.
Parlin & Orendorff Co., Canton, Ill.
Patten & Stafford, Canastota, N. Y.
Pekin Plow Co, Pekin, Ill.
Peru Plow & Wheel Co., Peru, Ill.
Racine-Sattley Mfg. Co., Springfield, Ill.
Reed Mfg. Co., Kalamazoo, Mich.
Rock Island Plow Co., Rock Island, Ill.
Rockford Mfg. Co., Rockford, Ill.
St. Joseph Plow Co., St. Joseph, Mo.
Sechler, D. M., Carriage Co., Moline, Ill.
Selby, Starr & Co., Peoria, Ill.
Spangler Mfg. Co., York, Pa.
Standard Harrow Co., Utica, N. Y.
Sterling Mfg. Co., Sterling, Ill.
Stoddard Mfg. Co., Dayton, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Tait, F\ B., Mfg. Co., Decatur, Ill.
Thomas Mfg. Co., Springfield, Ohio.
Thompson, J., & Sons, Mfg Co., Beloit, Wis.
Toledo Plow Co., Toledo, Ohio.
Whitman & Barnes Mfg. Co., Akron, O.
Wiard Plow Co., Batavia, Ill.

31 **HARVESTERS.** For mowing, reaping and binding in one operation.
Acme Harvester Co., Peoria, Ill.
Adriance, Platt & Co., Poughkeepsie, N. Y.
Akron Cultivator Co., Akron, Ohio.
American Harrow Co., Detroit, Mich.

HARVESTERS, continued

Bennett, H. L., & Co., Westerville, O.
Dowden Mfg. Co., Prairie City, Iowa
Eureka Mower Co., Utica, N. Y.
Holt Mfg. Co., Stockton, Cal.
Houser & Haines Mfg Co., Stockton, Cal.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Jackson, Byron Machine Works, 625 6th St., San Francisco, Cal.
Johnston Harvester Co., Batavia, N. Y.
Lehr Agricultural Co., Fremont, Ohio.
Le Roy Plow Co., Le Roy, N. Y.
Ohio Cultivator Co., Bellevue, Ohio.
Osborne, D. M., & Co., Auburn, N. Y.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Reed Mfg. Co., Kalamazoo, Mich.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Seiberling & Miller, Doylestown, Ohio.
Standard Harrow Co., Utica, N. Y.
Wood, Walter A., Hoosick Falls, N. Y.

32 **Broom Corn.**
Sutton, Frank, Arthur, Ill.

33 **HEADERS.** For cutting off the tops of grain, clover, kaffir corn, etc.
Acme Harvester Co., Peoria, Ill.
Eagle Mfg. Co., Kansas City, Mo.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Johnston Harvester Co., Batavia, N. Y.

34. **HORSE POWERS.** In which a mechanical arrangement converts the pull of a horse into power for running machinery.
Advance Thresher Co., Battle Creek, Mich.
Ames Plow Co., Quincy Hall, Boston, Mass.
Appleton Mfg. Co., Batavia, Ill.
Aultman Co., Canton, Ohio.
Aultman & Taylor Machinery Co., Mansfield, Ohio.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.
Baker & Hamilton, San Francisco, Cal.
Belle City Mfg. Co., Racine Junction, Wis.
Benicia Agricultural Works, Benicia, Cal.
Bennett, H. L., & Co., Westerville, Ohio.
Buch's, A., Sons, Elizabethtown, Pa.
Buckeye Feed Mill Co., Springfield, Ohio.
Buffalo Pitts Co., 20 Carolina St., Buffalo, N. Y.
Cardwell Machine Co., Richmond, Va.
Case, J. I., Threshing Machine Co., Racine, Wis.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Collins Plow Co., Quincy, Ill.
Colton, G. D., & Co., Galesburg, Ill.
Comstock, Geo. S., Mechanicsburg, Pa.
Conner, J. W., Orangeville, Pa.
Cree, S. G., & Son, Wheelock, Vt.
Dederick's, P. K., Sons, Albany, N. Y.
Deere & Mansur Co., Moline, Ill.
Eagle Machine Co., Lancaster, Ohio.
Ellis Keystone Agricultural Works, Pottstown, Pa.

HORSE POWERS, continued

Enterprise Mfg. Co., Columbiana, Ohio.
F. & N. Lawn Mower Co., Richmond, Ind.
Farquhar, A. B., Co., Ltd., York, Pa.
Foos Mfg. Co., Springfield, Ohio.
Gaar, Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.
Gray's, A. W., Sons, Middletown Springs, Vt.
Great Western Mfg. Co., Leavenworth, Kan.
Harder Mfg. Co., Cobleskill, N. Y.
Harrison Machine Works, Belleville, Ill.
Hercules Mfg. Co., Centerville, Iowa.
Hobson & Co., 17 State St., New York.
Hocking Valley Mfg. Co., Lancaster, Ohio.
Huber Mfg. Co., Marion, Ohio.
Jackson, Byron Machine Works, 625 6th St., San Francisco, Cal.
Jeffrey Mfg. Co., Columbus, Ohio.
Joliet Mfg. Co., Young's Ave. and Cass St., Joliet, Ill.
Keystone Farm Machine Co., York, Pa.
Keystone Mfg. Co., Sterling, Ill.
King & Hamilton Co., Ottawa, Ill.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lamb & Co., Freeport, Ill.
Lehr Agricultural Co., Fremont, Ohio.
Marion Mfg. Co., Marion, Ohio.
Marseilles Mfg. Co., Marseilles, Ill.
Mecklenburg Iron Works, Charlotte, N. C.
Merrill Iron Works, Merrill, Wis.
Messinger Mfg. Co., Tatamy, Pa.
Minneapolis Threshing Machine Co, W. Minneapolis, Minn.
Myers, F. E., & Bro., Ashland, Ohio.
Nichols & Shepard Co., Battle Creek, Mich.
New Birdsall Co., Auburn, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Northwest Thresher Co., Stillwater, Minn.
Reese, Fred. W., Paris, Ill.
Ross, E. W., Co., Springfield, Ohio.
Rumely, M., Co., La Porte, Ind.
Russell & Co., Massillon, Ohio.
St. Albans Foundry & Implement Co., St. Albans, Vt.
Sandwich Mfg. Co., Sandwich, Ill.
Silver Mfg. Co., Salem, Ohio.
Smalley Mfg. Co., Manitowoc, Wis.
Snow Mfg. Co., Batavia, Ill.
Sterling Mfg. Co., Sterling, Ill.
Union Iron Works, Decatur, Ill.
Westinghouse Co., Schenectady, N. Y.
Wheeler & Melick Machinery Co., Frankfort, N. Y.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.
Wilder-Strong Implement Co., Monroe, Mich.

35 **HULLERS, CLOVER.**

Advance Thresher Co., Battle Creek, Mich.
Aultman & Taylor Machinery Co., Mansfield, Ohio.
Birdsell Mfg. Co., South Bend, Ind.
Campbell, S. K., Central Bridge, N. Y.
Cash Supply & Mfg. Co., Kalamazoo, Mich.

HULLERS, CLOVER, continued

Gaar, Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Newark Machine Co., Newark, Ohio.
Reeves & Co., Columbus, Ind.
Rumely, M., Co., La Porte, Ind.

36 **Pea.**

Avery B. F., & Sons, Louisville, Ky.
Chattanooga Implement & Mfg. Co., E. Chattanooga, Tenn.
Star Pea Machine Co., Chattanooga, Tenn.

37 **HUSKERS AND SHREDDERS, CORN.** For preparing fodder.
Advance Thresher Co., Battle Creek, Mich.

American Shredder Co., Madison, Wis.
Appleton Mfg. Co., Batavia, Ill.
Corn King Husker Co., Rochester, Ind.
Deere & Mansur Co., Moline, Ill.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Janney Mfg. Co., Ottumwa, Iowa.
Keystone Mfg. Co., Sterling, Ill.
New Birdsall Co., Auburn, N. Y.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Rosenthal Corn Husker Co., Milwaukee, Wis.
Ross, E. W., Co., Springfield, Ohio.
Safety Shredder Co., New Castle, Ind.
Stevens, A. W., Co., Marinette, Wis.

38 **IMPLEMENTS, AGRICULTURAL.** Hand tools such as hoes, shovels, scythes, etc.

Akron Cultivator Co., Akron, Ohio.
Allen, S. L., & Co., 1107 Market St., Philadelphia, Pa.
American Fork & Hoe Co., Cleveland, Ohio.
Ames Plow Co., Quincy Hall, Boston, Mass.
Benicia Agricultural Works, Benicia, Cal.
Clipper Plow Co., Defiance, Ohio.
Continental Tool Co., Frankfort, N. Y.
Cutaway Harrow Co., Higganum, Conn.
Everett, J. A., Indianapolis, Ind.
Farquhar, A. B., Co., Ltd., York, Pa.
Geneva Tool Co., Geneva, Ohio.
Hobson & Co., 17 State St., New York.
Hussey Plow Co., Berwick, Maine.
Law Mfg. Co., Merriam Park, St. Paul, Minn.
Louden Machinery Co., Fairfield, Iowa.
Ohio Cultivator Co., Bellevue, Ohio.
Otsego Fork Mills Co., Girard, Pa.
Peru Plow & Wheel Co., Peru, Ill.
Pfleghar, F. P., & Sons, New Haven, Conn.
Porter, J. E., Co., Ottawa, Ill.
Sechler, D. M., Carriage Co., Moline, Ill.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Utica Tool Co., Utica, N. Y.
Wadsworth, David & Son, Auburn, N. Y.
Withington & Cooley Mfg. Co., Jackson, Mich.

IMPLEMENTS, continued

39 **Garden.**

Avery, B. F., & Sons, Louisville, Ky.
Geneva Tool Co., Geneva, Ohio.
Hickox, Mull & Hill Co., Toledo, Ohio.
Whitman & Barnes Mfg. Co., Akron, O.
Withington & Cooley Mfg. Co., Jackson, Mich.

40 **Pruning.**

Clipper Shear Co., Clyde, O.
Smith, Seymour & Son, Oakville, Conn.

41 **LAND ROLLERS.** For smoothing and leveling ploughed ground.

Adriance, Platt & Co., Poughkeepsie, N. Y.
Ames Plow Co., Quincy Hall, Boston, Mass.
Babcock Mfg. Co., Leonardsville, N. Y.
Benicia Agricultural Works, Benicia, Cal.
Bradley, David, Mfg. Co., Bradley, Ill.
Brown-Manly Plow Co., Malta, Ohio.
Buch's, A., Sons, Elizabethtown, Pa.
Bucher & Gibbs Plow Co., Canton, Ohio.
Carnegie Plow & Mfg. Co., Carnegie, Pa.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Childs, Chas. H., & Co., 12 Lafayette St., Utica, N. Y.
Clipper Plow Co., Defiance, Ohio.
Comstock, Geo. S., Mechanicsburg, Pa.
Cutaway Harrow Co., Higganum, Conn.
Deuscher, H. P., Co., Hamilton, Ohio.
Donaldson Bros., Mt. Clemens, Mich.
Dunham, J. W., & Son, Berea, Ohio.
Eddy, W., Plow Co., Greenwich, N. Y.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Gowanda Agricultural Works, Gowanda, N. Y.
Hickox, Mull & Hill Co., Toledo, Ohio.
Hobson & Co., 17 State St., New York.
Johnson & Field Co., Racine, Wis.
Keystone Farm Machine Co., York, Pa.
Lean, Roderick, Mfg. Co., Mansfield, Ohio.
Lehr Agricultural Co., Fremont, Ohio.
Macgowan & Finigan Foundry & Machine Co., St. Louis, Mo.
Messinger Mfg. Co., Tatamy, Pa.
Mountville Mfg. Co., Mountville, Pa.
Munnsville Plow Co., Munnsville, N. Y.
Ohio Cultivator Co., Bellevue, Ohio.
Peek, S. H., East Aurora, N. Y.
Standard Harrow Co., Utica, N. Y.
Tait, F. B., Mfg. Co., Decatur, Ill.
Toledo Plow Co., Toledo, Ohio.
Whitehurst, R. W., & Co., Norfolk, Va.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.
Wilder-Strong Implement Co., Monroe, Mich.

42 **LOADERS, HAY.** For loading hay to a wagon from a haycock, windrow or swath.

Appleton Mfg. Co., Batavia, Ill.
Bradley, David, Mfg. Co., Bradley, Ill.
Chambers, Bering, Quinlan Co., Decatur, Ill.

LOADERS, HAY, continued

Dain Mfg. Co., Ottumwa, Iowa.
Deere & Mansur Co., Moline, Ill.
Hocking Valley Mfg. Co., Lancaster, Ohio.
Huber Mfg. Co., Marion, Ohio.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.
Keystone Mfg. Co., Sterling, Ill.
Ohio Rake Co., Dayton, O.
Rock Island Plow Co., Rock Island, Ill.
Sandwich Mfg. Co., Sandwich, Ill.
Sterling Mfg. Co., Sterling, Ill.
Thomas Mfg. Co., Springfield, Ohio.

43 **MARKERS.** For making marks on the ground to indicate the position of rows or hills of plants, etc.

Buch's, A., Sons, Elizabethtown, Pa.
Peek, S. H., East Aurora, N. Y.

44 **MILLS, GRINDING.** For reducing food for stock to an edible condition.

Abele, Chris., 537 W. 50th St., New York.
Adams, W. T., Machine Co., Corinth, Miss.
Ames Plow Co., Quincy Hall, Boston, Mass.
Appleton Mfg. Co., Batavia, Ill.
Aultman & Taylor Machinery Co., Mansfield, O.
Baker & Hamilton, San Francisco, Cal.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Beery Mfg. Co., Upper Sandusky, Ohio.
Blue Valley Mfg. Co., Manhattan, Kan.
Bowsher, N. P., Co., South Bend, Ind.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Campbell, S. K., Central Bridge, N. Y.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.
Cole, R. D., Mfg. Co., Newnan, Ga.
Colton, G. D., & Co., Galesburg, Ill.
Dain Mfg. Co., Ottumwa, Iowa.
De Loach Mill Mfg. Co., Atlanta, Ga.
Duplex Mfg. Co., South Superior, Wis.
Eagle Machine Co., Lancaster, Ohio.
Eagle Mfg. Co., Kansas City, Mo.
Elgin Wind Power & Pump Co., Elgin, Ill.
Enterprise Mfg. Co., Columbiana, Ohio.
Eureka Bark Mill Co., Lancaster, Pa. *See adv. page 123.*
Excel Mfg. Co., Pottersville, N. J.
Farquhar, A. B., Co., Ltd., York, Pa.
Foos Mfg. Co., Springfield, Ohio.
Gaar, Scott & Co., Richmond, Ind.
Heebner & Sons, Lansdale, Pa.
Hercules Mfg. Co., Centerville, Iowa.
Howes, S., Co., Silver Creek, N. Y.
Humphrey & Sons, Joliet, Ill.
Hutchison, John, Mfg. Co., Jackson, Mich.
Iowa Grinder & Steamer Works, Waterloo, Iowa.
Janney Mfg. Co., Ottumwa, Iowa.
Kaestner & Co., 241 S. Jefferson St., Chicago, Ill.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.

MILLS, GRINDING, continued

Kelly, O. S., Western Mfg. Co., Iowa City, Iowa.
Keystone Farm Machine Co., York, Pa.
Lamb & Co., Freeport, Ill.
Lansing Motor & Pump Co., Lansing, Mich.
Litchfield Mfg. Co., Webster City, Iowa.
Maish Mfg. Co., Warsaw, Ind.
Mann, F. W., Co., Milford, Mass.
Marseilles Mfg. Co., Marseilles, Ill.
Messinger Mfg. Co., Tatamy, Pa.
Miller, L. J., 1233 Harrison Ave., Cincinnati, O.
Monarch Grubber Co., Lone Tree, Iowa.
Morrison Mfg. Co., Fort Madison, Iowa.
Mountville Mfg. Co., Mountville, Pa.
Munson Bros., Co., Utica, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Parson's Band Cutter & Self Feeder Co, Newton, Iowa.
Patch, A. H., Clarksville, Tenn.
Randolph, A. C., & Co., Newton, Iowa.
Roberts, Thos., Springfield, Ohio.
Robinson Mfg. Co., Muncy, Pa.
Ross, E. W., Co., Springfield, Ohio.
Ross, Chas., & Son, 16 Steuben St., Brooklyn, N. Y.
Sandwich Mfg. Co., Sandwich, Ill.
Smalley Mfg. Co., Manitowoc, Wis.
Sprout, Waldron & Co., Muncy, Pa.
Star Mfg. Co., 75 Depot St., New Lexington, O.
Stearns, E. C., & Co., Syracuse, N. Y.
Stedman Foundry & Machine Works, Aurora, Ind.
Sterling Mfg. Co., Sterling, Ill.
Stickney, Chas. A., Co., St. Paul, Minn.
Stover Mfg. Co., Freeport, Ill.
Stratton Mfg. Co., Erie, Pa.
Straub, A. W., Co., 3737 Filbert St., Philadelphia, Pa.
Straub Machinery Co., Storrs Station, Cincinnati, O.
Sturtevant Mill Co., Harrison Square, Boston, Mass.
Sullivan Mchy. Co., 135 Adams St., Chicago, Ill.
Union Corn Planter Co., Peoria, Ill.
Walker & Elliott, Wilmington, Del.
Whitehurst, R. W., & Co., Norfolk, Va.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.
Wilder-Strong Implement Co., Monroe, Mich.
Wilson Bros., Easton, Pa.
Wolf Co., Chambersburg, Pa.
Woodcock Feed Mill Co., Chillicothe, O.

45 **MOWING MACHINES.** For cutting down grain, etc.

Acme Harvester Co., Peoria, Ill.
Adriance, Platt & Co., Poughkeepsie, N. Y.
Emerson Mfg. Co., Rockford, Ill.
Enterprise Mfg. Co., Columbiana, Ohio.
Eureka Mower Co., Utica, N. Y.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Janesville Machine Co., Janesville, Wis.
Johnston Harvester Co., Batavia, N. Y.
Messinger Mfg. Co., Tatamy, Pa.
Ney Mfg. Co., Canton, O.

MOWING MACHINES, continued

Osborne, D. M., & Co., Auburn, N. Y.
Richardson Mfg. Co., Worcester, Mass
Rockford Mfg. Co., Rockford, Ill.
Seiberling & Miller, Doylestown, Ohio.
Whitman & Barnes Mfg. Co., Akron, O.
Wood, Walter A., Hoosick Falls, N. Y.

46 **Lawn.** For cutting grass.

American Lawn Mower Co., Muncie, Ind.
Avery, B. F., & Sons, Louisville, Ky.
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.
Clipper Lawn Mower Co., Norristown, Pa.
Coldwell Lawn Mower Co., Newburgh, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
Elwood Lawn Mower Co., Elwood, Ind.
Enterprise Mfg. Co., 3d & Dauphin Sts., Philadelphia, Pa.
F. & N. Lawn Mower Co., Richmond, Ind.
Henley Lawn Mower Co., Richmond, Ind.
Hotchkiss, E. M., Co., New Haven, Conn.
Jewett, H. M., Moravia, N. Y.
Leavitt Mfg. Co., Urbana, Ill.
Mast, Foos & Co., Springfield, O.
Philadelphia Lawn Mower Co., 3107 Chestnut St., Philda, Pa.
Root Bros. Co., Plymouth, O.
Stearns, E. C., & Co., Syracuse, N. Y.
Thomas Mfg. Co., Springfield, O.

47 **PARING MACHINES, FRUIT.**

Goodell Co., Antrim, N. H.
Leavitt Mfg. Co., Urbana, Ill.

48 **PLANTERS, BEET.**

Morrison Mfg. Co., Ft. Madison, Iowa.

49 **Corn.**

American Seeding Machine Co., Springfield, Ohio.
Ames Plow Co., Quincy Hall, Boston, Mass.
Aspinwall Mfg. Co., Jackson, Mich.
Atlanta Agricultural Works, Atlanta, Ga.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.
Avery, B. F., & Sons, Louisville, Ky.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Bement's, E., Sons, Lansing, Mich.
Bradley, David, Mfg. Co., Bradley, Ill.
Brown, Geo. W., & Co. Galesburg, Ill.
Brown Mfg. Co., Zanesville, Ohio.
Cardwell Machine Co., Richmond, Va.
Case, J. I., Threshing Machine Co., Racine, Wis.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Chambers, Bering, Quinlan Co., Decatur, Ill.
Childs, Chas. H., & Co., 12 Lafayette St., Utica, N. Y.
Deere & Mansur Co., Moline, Ill.
Deuscher, H. P., Co., Hamilton, Ohio.
Eagle Machine Co., Lancaster, Ohio.
Eagle Mfg. Co., Kansas City, Mo.

PLANTERS, CORN, continued

Eddy, W., Plow Co., Greenwich, N. Y.
Emerson Mfg. Co., Rockford, Ill.
Eureka Mower Co., Utica, N. Y.
Farquhar, A. B., Co., Ltd., York, Pa.
Fuller & Johnson Mfg. Co., Madison, Wis.
Gale Mfg. Co., Albion, Mich.
Grand Detour Plow Co., Dixon, Ill.
Harrison Mfg. Co., Sterling, Ill.
Haworth & Sons Mfg. Co., Decatur, Ill.
Hayes Pump & Planter Co., Galva, Ill.
Hench & Dromgold Co., York, Pa.
Hughes & Smythe, Galena, Ohio.
Janney Mfg. Co., Ottumwa, Iowa.
Keystone Farm Machine Co., York, Pa.
Keystone Mfg. Co., Sterling, Ill.
Kingman & Co., Peoria, Ill.
Lehr Agricultural Co., Fremont, Ohio.
Luthy & Co., 318 S. Water St., Peoria, Ill.
Messinger Mfg. Co., Tatamy, Pa.
Moline Plow Co., Moline, Ill.
Mountville Mfg. Co., Mountville, Pa.
Mulford Heater Co., Galva, Ill.
Ohio Cultivator Co., Bellevue, Ohio.
Ohio Rake Co., Dayton, O.
Parlin & Orendorff Co., Canton, Ill.
Peru Plow & Wheel Co., Peru, Ill.
Peter's Pump Co., Kewanee, Ill.
Porter, J. E., Co., Ottawa, Ill.
Racine-Sattley Mfg. Co., Springfield, Ill.
Rhea-Thielens Implement Co., Peoria, Ill.
Rock Island Plow Co., Rock Island, Ill.
Sechler, D. M., Carriage Co., Moline, Ill.
Sheffield Mfg. Co., Burr Oak, Mich.
Spangler Mfg. Co., York, Pa.
Standard Harrow Co., Utica, N. Y.
Sterling Mfg. Co., Sterling, Ill.
Stoddard Mfg. Co., Dayton, Ohio.
Tait, F. B., Mfg. Co., Decatur, Ill.
Thompson, J., & Sons, Mfg. Co., Beloit, Wis.
Union Corn Planter Co., Peoria, Ill.
Wayne Works, Richmond, Ind.
Whitman & Barnes Mfg. Co., Akron, O.
Williams Mfg. Co., Decatur, Ill.
Wiard Plow Co., Batavia, Ill.

50 **Cotton.**

Atlanta Agricultural Works, Atlanta, Ga.
Eagle Mfg. Co., Kansas City, Mo.
Farquhar, A. B., Co., York, Pa.
Gill, J. H., Raleigh, N. C.
Moline Plow Co., Moline, Ill.
Ohio Cultivator Co., Bellevue, O.
Rock Island Plow Co., Rock Island, Ill.
Southern Plow Co., Columbus, Ga.
Thompson, J., & Sons, Mfg. Co., Beliot, Wis.
Wayne Works, Richmond, Ind.

PLANTERS, continued

51 **Potato.**

Aspinwall Mfg. Co., Jackson, Mich.
Bateman Mfg. Co., Grenloch, N. J.
Chambers, Bering, Quinlan Co., Decatur, Ill.
Dowden Mfg. Co., Prairie City, Iowa.
Eureka Mower Co., Utica, N. Y.
Keystone Mfg. Co., Sterling, Ill.
McWhorter Mfg. Co., Riverton, N. J.
Messinger Mfg. Co., Tatamy, Pa.

52 **PLOWS.**

Ames Plow Co., Quincy Hall, Boston, Mass.
Atlanta Agricultural Works, Atlanta, Ga.
Avery, B. F., & Sons, Louisville, Ky.
Babcock Mfg. Co., Leonardsville, N. Y.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Bement's, E., Sons, Lansing, Mich.
Benicia Agricultural Works, Benicia, Cal.
Best Mfg. Co., San Leandro, Cal.
Bissell Chilled Plow Works, South Bend, Ind.
Blount, H. F., Evansville, Ind.
Brinly-Hardy Co., Louisville, Ky.
Brown, Geo. W., & Co., Galesburg, Ill.
Brown-Manly Plow Co., Malta, Ohio.
Bucher & Gibbs Plow Co., Canton, Ohio.
Carnegie Plow & Mfg. Co., Carnegie, Pa.
Case, J. I. Plow Works, Racine, Wis.
Chamberlin Rider Mfg. Co., Hudson, Mich.
Chattanooga Implement & Mfg. Co., E. Chattanooga, Tenn.
Chattanooga Plow Co., Chattanooga, Tenn.
Childs, Chas. H., & Co., 12 Lafayette St., Utica, N. Y.
Clipper Plow Co., Defiance, Ohio.
Coffeyville Implement & Mfg. Co., Coffeyville, Kan.
Collins Plow Co., Quincy, Ill.
Cross, George A., Watertown, N. Y.
Cutaway Harrow Co., Higganum, Conn.
Deere & Co., Moline, Ill.
Donaldson Bros., Mt. Clemens, Mich.
Eagle Mfg. Co., Kansas City, Mo.
Eddy, W., Plow Co., Greenwich, N. Y.
Emerson Mfg. Co., Rockford, Ill.
Eureka Mower Co., Utica, N. Y.
Farquhar, A. B., Co., Ltd., York, Pa.
Fuller & Johnson Mfg. Co., Madison, Wis.
Gale Mfg. Co., Albion, Mich.
Gill, J. H., Raleigh, N. C.
Gowanda Agricultural Works, Gowanda, N. Y.
Grand Detour Plow Co., Dixon, Ill.
Ground Hog Plow & Foundry Co., Clarksville, Tenn.
Hallock, D. Y., & Sons, 24 York St., York, Pa.
Hapgood Plow Co., Alton, Ill.
Hartman Mfg. Co., Vincennes, Ind.
Hobson & Co., 17 State St., New York
Hussey Plow Co., Berwick, Maine.
Keystone Farm Machine Co., York, Pa.
Kingman & Co., Peoria, Ill.

PLOWS, continued

La Crosse Plow Co., La Crosse, Wis.
Lehr Agricultural Co., Fremont, Ohio.
Le Roy Plow Co., Le Roy, N. Y.
Mecklenburg Iron Works, Charlotte, N. C.
Messinger Mfg. Co., Tatamy, Pa.
Mishawaka Plow Co., Mishawaka, Ind.
Moline Plow Co., Moline, Ill.
Morrison Mfg. Co., Ft. Madison, Iowa.
Mountville Mfg. Co., Mountville, Pa.
Munnsville Plow Co., Munnsville, N. Y.
Ohio Cultivator Co., Bellevue, Ohio.
Oliver Chilled Plow Co., South Bend, Ind.
Parlin & Orendorff Co., Canton, Ill.
Peek, S. H., East Aurora, N. Y.
Pekin Plow Co., Pekin, Ill.
Peru Plow & Wheel Co., Peru, Ill.
Racine-Sattley Mfg. Co., Springfield, Ill.
Reed Mfg. Co., Kalamazoo, Mich.
Richmond Plow Co., Richmond, Ind.
Rock Island Plow Co., Rock Island, Ill.
Rockford Mfg. Co., Rockford, Ill.
St. Joseph Plow Co., St. Joseph, Mo.
Sanders, Newell, Plow Co., Chattanooga, Tenn.
Shunk Plow Co., Bucyrus, Ohio.
Smalley Mfg. Co., Manitowoc, Wis.
South Bend Chilled Plow Co., South Bend, Ind.
Southern Plow Co., Columbus, Ga.
Standard Harrow Co., Utica, N. Y.
Stoddard Mfg. Co., Dayton, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Thompson, J., & Sons, Mfg. Co., Beloit, Wis.
Toledo Plow Co., Toledo, Ohio.
Towers-Sullivan Mfg. Co., Rome, Ga.
Vulcan Plow Co., Evansville, Ind.
Wagner Plow Co., Indianapolis, Ind.
Whitehurst, R. W., & Co., Norfolk, Va.
Wiard Plow Co., Batavia, Ill.
Wilder-Strong Implement Co., Monroe, Mich.

53 **Steam.**

Best Mfg. Co., San Leandro, Cal.
Western Wheeled Scraper Co., Aurora, Ill.

54 **PRESSES, BALING.** See Finding List.

55 **PULLERS, BEET.**

Lehr Agricultural Co., Fremont, Ohio.
Moline Plow Co., Moline, Ill.
Ohio Cultivator Co., Bellevue, Ohio.

56 **Onion.**

Bateman Mfg. Co., Grenloch, N. J.
Deere & Mansur Co., Moline, Ill.
Jeeliff, C. O., & Co., Southport, Conn.

57 **Stump.**

Bennett, H. L., & Co., Westerville, Ohio.

PULLERS, STUMP, continued

Butterworth & Lowe, Grand Rapids, Mich.
Caward, R. S., Cresco, Iowa.
Farquhar, A. B., Co., Ltd., York, Pa.
Hercules Mfg. Co., Centerville, Iowa.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.
Milne Mfg. Co., Monmouth, Ill.
Monarch Grubber Co., Lone Tree, Ia.
Snow Mfg. Co., Batavia, Ill.

58 **RAKES.** Two wheeled implements having long curved tines between the wheels, for gathering hay, etc.

Acme Harvester Co., Peoria, Ill.
Adriance, Platt & Co., Poughkeepsie, N. Y.
Ames Plow Co., Quincy Hall, Boston, Mass.
Barley, Thos. K., Sedalia, Mo.
Brown, Geo. W., & Co., Galesburg, Ill.
Chambers, Bering, Quinlan Co., Decatur, Ill.
Clipper Chilled Plow Co., Elmira, N. Y.
Dain Mfg. Co., Ottumwa, Ia.
Deers & Mansur Co., Moline, Ill.
Deuscher, H. P. Co., Hamilton, Ohio.
Eddy, W., Plow Co., Greenwich, N. Y.
Emerson Mfg. Co., Rockford, Ill.
Fuller & Johnson Mfg Co., Madison, Wis.
Hapgood Plow Co., Alton, Ill.
Hocking Valley Mfg. Co., Lancaster Ohio.
Hughes & Smythe, Galena, Ohio.
International Harvester Co., Adams & Jefferson Sts. Chicago.
Jackson, Byron, Machine Works, 625 6th St., San Francisco.
Jenkins Hay Rake & Stacker Co., Browning, Mo.
Johnston Harvester Co., Batavia, N. Y.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.
Keystone Mfg. Co., Sterling, Ill.
La Crosse Plow Co., La Crosse, Wis.
Leavitt Mfg. Co., Urbana, Ill.
Messinger Mfg. Co., Tatamy, Pa.
Moline Plow Co., Moline, Ill.
Ohio Rake Co., Dayton, O.
Osborne, D. M., & Co., Auburn, N. Y.
Patten & Stafford, Canastota, N. Y.
Richardson Mfg. Co., Worcester, Mass.
Rockford Mfg. Co., Rockford, Ill.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Rude Bros. Mfg. Co., Liberty, Ind.
Selby, Starr & Co., Peoria, Ill.
Sterling Mfg. Co., Sterling, Ill.
Stoddard Mfg. Co., Dayton, Ohio.
Sucker State Drill Co., Belleville, Ill.
Thomas Mfg. Co., Springfield, Ohio.
Wiard Plow Co., Batavia, Ill.
Wood, Walter A., Hoosick Falls, N. Y.

59 **REAPERS.** For gathering mown grain into bundles.

Acme Harvester Co., Peoria, Ill.
Advance Thresher Co., Battle Creek, Mich.
Case, J. I., Threshing Machine Co., Racine, Wis.
Gaar, Scott & Co., Richmond, Ind.

REAPERS, continued

Geiser Mfg. Co., Waynesboro, Pa.
Huber Mfg. Co., Marion, O.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Mecklenburg Iron Works, Charlotte, N. C.
Minneapolis Threshing Machine Co., West Minneapolis, Minn.
Nichols & Shepard Co., Battle Creek, Mich.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Robinson & Co., Richmond, Ind.
Westinghouse Co., Schenectady, N. Y.

60. SHELLERS, CORN.

Ames Plow Co., Quincy Hall, Boston, Mass.
Appleton Mfg. Co., Batavia, Ill.
Baker & Hamilton, San Francisco, Cal.
Barnard & Leas Mfg. Co., Moline, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Brinly-Hardy Co., Louisville, Ky.
Brown, Geo. W., & Co., Galesburg, Ill.
Buch's, A., Sons, Elizabethtown, Pa.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Challenge Windmill & Feed Mill Co., Batavia, Ill.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.
Dain Mfg. Co., Ottumwa, Iowa.
Deere & Mansur Co., Moline, Ill.
Dunham, J. W., & Son, Berea, Ohio.
Duplex Mfg. Co., South Superior, Wis.
Eagle Machine Co., Lancaster, Ohio.
Eddy, W., Plow Co., Greenwich, N. Y.
Excel Mfg. Co., Pottersville, N. J.
Farquhar, A. B., Co., Ltd., York, Pa.
Flint & Walling Mfg. Co., Kendallville, Ind.
Foos Mfg. Co., Springfield, Ohio.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Great Western Mfg. Co., Leavenworth, Kans.
Hobson & Co., 17 State St., New York.
Hocking Valley Mfg. Co., Lancaster, Ohio.
Howes, S., Co., Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.
Hutchison, John, Mfg. Co., Jackson, Mich.
Janney Mfg. Co., Ottumwa, Iowa.
Joliet Mfg. Co., Young's Ave. and Cass St., Joliet, Ill.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.
Keystone Farm Machine Co., York, Pa.
Keystone Mfg. Co., Sterling, Ill.
King & Hamilton Co., Ottawa, Ill.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Klotz Machine Co., Sandusky, O.
Marseilles Mfg. Co., Marseilles, Ill.
Mecklenburg Iron Works, Charlotte, N. C.
Merriman Bros. & Co., Ft. Atkinson, Wis.
Messinger Mfg. Co., Tatamy, Pa.
Minneapolis Threshing Machine Co., W. Minneapolis, Minn.
Mountville Mfg. Co., Mountville, Pa.
Munson Bros., Co., Utica, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.

SHELLERS, CORN, continued

Ohio Rake Co., Dayton, O.
Patch, A. H., Clarksville, Tenn.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Richmond City Mill Works, Richmond, Ind.
Ross, E. W., Co., Springfield, Ohio.
Rumsey & Co., Ltd., Seneca Falls, N. Y.
Sandwich Mfg. Co., Sandwich, Ill.
Smalley Mfg. Co., Manitowoc, Wis.
Snow Mfg. Co., Batavia, Ill.
Spangler Mfg. Co., York, Pa.
Sprout, Waldon, & Co., Muncy, Pa.
Star Mfg. Co., 75 Depot St., New Lexington, Ohio.
Stevens, A. W., Co., Marinette, Wis.
Tait, F. B., Mfg. Co., Decatur, Ill.
Union Iron Works, Decatur, Ill.
Whitehurst, R. W., & Co., Norfolk, Va.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.
Whitman & Barnes Mfg. Co., Akron, O.
Wilder-Strong Implement Co., Monroe, Mich.
Wilson Bros., Easton, Pa.

61 **SHOCKERS.** For gathering stacks of corn.

International Harvester Co., Adams & Jefferson Sts., Chicago.

62 **SORTERS, POTATO.**

Aspinwall Mfg. Co., Jackson, Mich.
Dowden Mfg. Co., Prairie City, Iowa.
Hoover-Prout Co., Avery, Ohio.

63 **Seed, Bean, etc.**

Bacon Mfg. Co., Pontiac, Mich.
Miller Bros., Rochester, Mich.

64 **SOWERS, SEED.** For broadcast sowing.

Allen, S. L., & Co., 1107 Market St., Philadelphia, Pa.
American Seeding Machine Co., Springfield, Ohio.
Ames Plow Co., Quincy Hall, Boston, Mass.
Appleton Mfg. Co., Batavia, Ill.
Avery, B. F., & Sons, Louisville, Ky.
Baker & Hamilton, San Francisco, Cal.
Bateman Mfg. Co., Grenloch, N. J.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Benicia Agricultural Works, Benicia, Cal.
Campbell Corn Drill Co., Harrison, Ohio.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Chambers, Bering, Quinlan Co., Decatur, Ill.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.
Crown Mfg. Co., Phelps, N. Y.
Cutaway Harrow Co., Higganum, Conn.
Cyclone Seeder Co., Urbana, Ind.
Deere & Mansur Co., Moline, Ill.
Everitt, J. A., 227 W. Washington St. Indianapolis, Ind.
Foster & Williams Mfg. Co., Racine, Wis.
Fuller & Johnson Mfg. Co., Madison, Wis.
Goodell Co., Antrim, N. H.
Grant-Ferris Co., Troy, N. Y.

SOWERS, SEED, continued

Hercules Mfg. Co., Centerville, Iowa.
Humphrey & Sons, Joliet, Ill.
Janesville Machine Co., Janesville, Wis.
Johnson & Field Co., Racine, Wis.
Keystone Mfg. Co., Sterling, Ill.
Kingman & Co., Peoria, Ill.
McSherry Mfg. Co., Middletown, Ohio.
Mast, P. P., & Co., Springfield, Ohio.
Monitor Drill Co., Minneapolis, Minn.
Owatonna Mfg. Co., Owatonna, Minn.
Reese, Fred W., Paris, Ill.
Rhea-Thielens Implement Co., Peoria, Ill.
Richardson Mfg. Co., Worcester, Mass.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Selby, Starr & Co., Peoria, Ill.
Star Seeder Co., Shortsville, N. Y.
Sterling Mfg. Co., Sterling, Ill.
Stoddard Mfg. Co., Dayton, Ohio.
Sucker State Drill Co., Belleville, Ill.
Tait, F. B., Mfg. Co., Decatur, Ill.
Thomas Mfg. Co., Springfield, Ohio.
Thompson, J., & Sons Mfg. Co., Beloit, Wis.
Toledo Plow Co., Toledo, Ohio.
Van Brunt & Wilkins Mfg. Co., Horicon, Wis.
Wayne Works, Richmond, Ind.
Whitman Agricultural Co., 6900 S. Broadway, St. Louis, Mo.
Whitman & Barnes Mfg. Co., Akron, O.

65 **STACKERS.** For depositing straw from a threshing machine on a wagon or a stack.

Acme Harvester Co., Peoria, Ill.
Advance Thresher Co., Battle Creek, Mich.
Aultman Co., Canton, Ohio.
Aultman & Taylor Machinery Co., Mansfield, Ohio.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.
Birdsell Mfg. Co., South Bend, Ind.
Buffalo Pitts Co., 20 Carolina St., Buffalo, N. Y.
Case, J. I., Threshing Machine Co., Racine, Wis.
Dain Mfg. Co., Ottumwa, Iowa.
Eagle Mfg. Co., Kansas City, Mo.
Fosston Wind Stacker Co., Minneapolis, Minn.
Frick Co., Waynesboro, Pa.
Gaar, Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.
Harrison Machine Works, Belleville, Ill.
Huber Mfg. Co., Marion, Ohio.
Hunt, Helm & Ferris, Harvard, Ill.
Indiana Mfg. Co., Indianapolis, Ind.
Jackson, Byron, Machine Works, 625 6th St., San Francisco, Cal.
Kansas City Hay Press Co., 107 Mill St., Kansas City, Mo.
Keystone Mfg. Co., Sterling, Ill.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Law Mfg. Co., Merriam Park, St. Paul, Minn.
Louden Machinery Co., Fairfield, Iowa.
Maplebay Wind Stacker Co., Crookston, Minn.
Marion Mfg. Co., Marion, Ohio.

STACKERS, continued

Minneapolis Threshing Machine Co., W. Minneapolis, Minn.
Monarch Feeder & Stacker Co., Cedar Falls, Iowa.
Morningstar Mfg. Co., Napoleon, Ohio.
New Birdsall Co., Auburn, N. Y.
Newark Machine Co., Newark, Ohio.
Nichols & Shepard Co., Battle Creek, Mich.
Pella Stacker Co., Pella, Iowa.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Racine-Sattley Mfg. Co., Springfield, Ill.
Randolph, A. C., & Co., Newton, Iowa.
Robinson & Co., Richmond, Ind.
Rumely, M., Co., La Porte, Ind.
Russell & Co., Massillon, Ohio.
Russell Wind Stacker Co., Indianapolis, Ind.
Sandwich Mfg. Co., Sandwich, Ill.
Stevens, A. W. Co., Marinette, Wis.

66 **TEDDERS.** For stirring and tossing cut grass so as to spread it for drying.

Ames Plow Co., Quincy Hall, Boston, Mass.
Hocking Valley Mfg. Co., Lancaster, Ohio.
International Harvester Co., Adams & Jefferson Sts., Chicago.
Johnston Harvester Co., Batavia, N. Y.
Mountville Mfg. Co., Mountville, Pa.
Ohio Rake Co., Dayton, O.
Osborne, D. M., & Co., Auburn, N. Y.
Richardson Mfg. Co., Worcester, Mass.
Sterling Mfg. Co., Sterling, Ill.
Stoddard Mfg. Co., Dayton, Ohio.
Thomas Mfg. Co., Springfield, Ohio.
Wood, Walter A., Hoosick Falls, N. Y.

67 **THRESHING MACHINES AND SEPARATORS.** For separating the grain from straw and chaff.

Advance Thresher Co., Battle Creek, Mich.
Appleton Mfg. Co., Batavia, Ill.
Aultman Co., Canton, Ohio.
Aultman & Taylor Machinery Co., Mansfield, Ohio.
Avery Mfg. Co., 334 Iowa St., Peoria, Ill.
Barker Feeder Co., Racine, Wis.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Beeman & Co., Minneapolis, Minn.
Belle City Mfg. Co., Racine Junction, Wis.
Bowen & Quick, Auburn, N. Y.
Buffalo Pitts Co., 20 Carolina St., Buffalo, N. Y.
Campbell, S. K., Central Bridge, N. Y.
Cardwell Machine Co., Richmond, Va.
Case, J. I., Threshing Machine Co., Racine, Wis.
Colean Mfg. Co., Peoria, Ill.
Conner, J. W., Orangeville, Pa.
Eddy, W., Plow Co., Greenwich, N. Y.
Ellis Keystone Agricultural Works, Pottstown, Pa.
Farquhar, A. B., Co., Ltd. York, Pa.
Frick Co., Waynesboro, Pa.
Gaar, Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.

THRESHING MACHINES, continued

Grant-Ferris Co., Troy, N. Y.
Gray's, A. W., Sons, Middletown Springs, Vt.
Harder Mfg. Co., Cobleskill, N. Y.
Harrison Machine Works, Belleville, Ill.
Heebner & Sons, Lansdale, Pa.
Heilman Machine Works, Evansville, Ind.
Huber Mfg. Co., Marion, Ohio.
Kelly, O. S., Western Mfg. Co., Iowa City, Iowa.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Marion Mfg. Co., Marion, Ohio.
Mecklenburg Iron Works Charlotte, N. C.
Messinger Mfg. Co., Tatamy, Pa.
Minneapolis Threshing Machine Co., W. Minneapolis, Minn.
Morningstar Mfg. Co., Napoleon, Ohio.
Munson Bros., Co., Utica, N. Y.
Nichols & Shepard Co., Battle Creek, Mich.
New Birdsall Co., Auburn, N. Y.
Northwest Thresher Co., Stillwater, Minn.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Reese, Fred. W., Paris, Ill.
Robinson & Co., Richmond, Ind.
Rumely, M., Co., La Porte, Ind.
Russell & Co., Massillon, Ohio.
St. Albans Foundry & Implement Co., St. Albans, Vt.
Stevens, A. W., Co., Marinette, Wis.
Westinghouse Co., Schenectady, N. Y.
Wheeler & Melick Machinery Co., Frankfort, N. Y.

68 TRANSPLANTING MACHINES.

Fuller & Johnson Mfg. Co., Madison, Wis.
McSherry Mfg. Co., Middletown, Ohio.
Stoddard Mfg. Co., Dayton, Ohio.

69 TREAD POWERS. In which the power for running machinery is supplied by horses, dogs, sheep, etc., which move a treadmill.

Ames Plow Co., Quincy Hall, Boston, Mass.
Appleton Mfg. Co., Batavia, Ill.
Belle City Mfg. Co., Racine Junction, Wis.
Benicia Agricultural Works, Benicia, Cal.
Campbell, S. K., Central Bridge, N. Y.
Conner, J. W., Orangeville, Pa.
Ellis Keystone Agricultural Works, Pottstown, Pa.
Farquhar, A. B., Co., Ltd., York, Pa.
Gowanda Agricultural Works, Gowanda, N. Y.
Gray's, A. W., Sons, Middletown Springs, Vt.
Harder Mfg. Co., Cobleskill, N. Y.
Heebner & Sons, Lansdale, Pa.
Lamb & Co., Freeport, Ill.
Messinger Mfg. Co., Tatamy, Pa.
Ross, E. W., Co., Springfield, Ohio.
St. Albans Foundry & Implement Co., St. Albans, Vt.
Sandwich Mfg. Co., Sandwich, Ill.
Schoharie Co. Agricultural Works, Central Bridge, N. Y.
Smalley Mfg. Co., Manitowoc, Wis.
Wheeler & Melick Machinery Co., Frankfort, N. Y.
Wilder-Strong Implement Co., Monroe, Mich.

70 **WEEDING MACHINES.** For digging up weeds.

Acme Harvester Co., Peoria, Ill.
Aspinwall Mfg. Co., Jackson, Mich.
Babcock Mfg. Co., Leonardsville, N. Y.
Bateman Mfg. Co., Grenloch, N. J.
Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.
Bement's, E., Sons, Lansing, Mich.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Childs, Charles H., & Co., 12 Lafayette St., Utica, N. Y.
Cutaway Harrow Co., Higganum, Conn.
Dowden Mfg. Co., Prairie City, Iowa.
Eureka Mower Co., Utica, N. Y.
Fuller & Johnson Mfg. Co., Madison, Wis.
Hickox, Mull & Hill Co., Toledo, Ohio.
Keystone Farm Machine Co., York, Pa.
Law Mfg. Co., Merriam Park, St. Paul, Minn.
Monitor Drill Co., Minneapolis, Minn.
Morrison Mfg. Co., Ft. Madison, Iowa.
Standard Harrow Co., Utica, N. Y.
Wiard Plow Co., Batavia, Ill.

---

71 FLOUR MILL MACHINERY.

71A **ASPIRATORS.** For separating and cooling grain by means of an exhaust fan.

Barnard & Leas Manufacturing Co., Moline, Ill.
Beall Improvements Co., Decatur, Ill.
Case Manufacturing Co., Columbus, Ohio.
Great Western Manufacturing Co., Leavenworth, Kan.
Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Harmon-Whitmore Co., Jackson, Mich.
Howes S., Co., Silver Creek, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Manufacturing Co., Buffalo, N. Y.
Richmond City Mill Works, Richmond, Ind.
Sprout, Waldron & Co., Muncy, Pa.
Wolf Co., Chambersburg, Pa.

72 **BOLTERS.** For sifting meal or flour.

Abele, Chris., 537 W. 50th St., New York.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Butler E. T., 101 Girard Ave., Philadelphia, Pa.
Case Mfg. Co., Columbus, Ohio.
Dubuque Turbine & Roller Mill Co., Dubuque, Iowa.
Foos Mfg. Co., Springfield, Ohio.
Great Western Mfg. Co., Leavenworth, Kansas.
Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Howes, S., Co., Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.
Hutchison, John, Mfg. Co., Jackson, Mich.

BOLTERS, continued

Maish Mfg. Co., Warsaw, Ind.
Meisel Mfg. Co., Fort Huron, Mich.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Richmond City Mill Works, Richmond, Ind.
Robinson Mfg. Co., Muncy, Pa.
Ross, Chas., & Son, 16 Steuben St., Brooklyn, N. Y.
Salem Machine Works, Salem, Va.
Salzman Mfg. Co., Hamilton, Ohio.
Sprout, Waldron & Co., Muncy, Pa.
Walker & Elliott, Wilmington, Del.
Wolf Co., Chambersburg, Pa.

73 **CRUSHERS, CORN.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Engineering Co., Springfield, Ohio.
Barnard & Leas Manufacturing Co., Moline, Ill.
Barry & Zecher, Lancaster, Pa.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Bowsher, N. P., Co., South Bend, Ind.
City Iron Works, Grand Lodge, Mich.
Eureka Bark Mill Co., Lancaster, Pa. *See adv. page 123.*
Excel Manufacturing Co., Pottersville, N. J.
Foos Manufacturing Co., Springfield, Ohio.
Horton Manufacturing Co., Painesville, Ohio.
Howes, S., Co., Silver Creek, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Manufacturing Co., Buffalo, N. Y.
Richmond City Mill Works, Richmond, Ind.
Ridgway, Craig & Son Co., Coatesville, Pa.
Robinson Manufacturing Co., Muncy, Pa.
Sprout, Waldron & Co., Muncy, Pa.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Vulcan Iron Works, Wilkes-Barre, Pa.
Walker & Elliott, Wilmington, Del.
Wolf Co., Chambersburg, Pa.

74 **DEGERMINATORS.** For splitting the kernels and removing the germ therefrom.

Beall Improvements Co., Decatur, Ill.

75 **DRESSERS, FLOUR.** For grading flour.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Manufacturing Co., Moline, Ill.
Case Manufacturing Co., Columbus, Ohio.
Great Western Manufacturing Co., Leavenworth, Kan.
Griscom & McFeely, 521 No. 23d St., Philadelphia, Pa.
Knickerbocker Co., Jackson, Mich.
Maish Manufacturing Co., Warsaw, Ind.
Meisel Manufacturing Co., Port Huron, Mich.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Manufacturing Co., Buffalo, N. Y.
Ordway, A. F., & Sons, Beaver Dam, Wis.
Richmond City Mill Works, Richmond, Ind.
Robinson Manufacturing Co., Muncy, Pa.
Salem Machine Works, Salem, Va.

DRESSERS, FLOUR, continued

Sprout, Waldron & Co., Muncy, Pa.
Wave System Bolting Co., Dayton, Ohio.
Wolf Co., Chambersburg, Pa.
Ypsilanti Machine Works, Ypsilanti, Mich.

76 **DRIERS, GRAIN.** For freeing grain from moisture, preparatory to milling.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Engineering Co., Springfield, Ohio.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Beall Improvements Co., Decatur, Ill.
Butler, E. T., 101 Girard Avenue, Philadelphia, Pa.
Cutler Co., North Wilbraham, Mass.
Great Western Mfg. Co., Leavenworth, Kansas.
Griscom & McFeely, 521 No. 23rd St., Philadelphia, Pa.
Hess Warming & Ventilating Co., 709 Tacoma Bldg., Chicago, Ill.
Howes, S., Co., Silver Creek, N. Y.
Johnson Foundry & Machine Works, Battle Creek, Mich.
Lohr, C. W., Mfg. Co., Wayne, Mich.
Meisel Mfg. Co., Port Huron, Mich.
Morris, Henry G., 408 The Bourse, Philadelphia, Pa.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Paine-Ellis Grain Drier Co., Milwaukee, Wis.
Richmond Mfg. Co., Lockport, N. Y.
Victor Heater Co., Minneapolis, Minn.
Wolf Co., Chambersburg, Pa.

77 **DUST COLLECTORS.** For collecting and removing injurious or explosive dust from a flouring mill.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Draver Bros., Richmond, Ind.
Harmon-Whitmore Co., Jackson Mich.
Knickerbocker Co., Jackson, Mich.
Lohr, C. W., Mfg. Co., Wayne, Mich.
Mitchell-Parks Mfg. Co., 1234 S. 7th St., St. Louis, Mo.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Prinz & Rau Mfg. Co., 659 E. Water St., Milwaukee, Wis.
Richmond City Mill Works, Richmond, Ind.
Richmond Mfg. Co., Lockport, N. Y.
Salem Machine Works, Salem, Va.
Wolf Co., Chambersburg, Pa.

78 **DUSTERS, BRAN.** For removing the flour that remains in bran after bolting.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Case Mfg. Co., Columbus, Ohio.
Great Western Mfg. Co., Leavenworth, Kan.
Howes, S., Co., Silver Creek, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Ordway, A. F., & Sons, Beaver Dam, Wis.
Richmond City Mill Works, Richmond, Ind.

DUSTERS, BRAN, continued

Richmond Mfg. Co., Lockport, N. Y.
Salem Machine Works, Salem, Va.
Wolf Co., Chambersburg, Pa.

79 **FEED GOVERNORS.** For regulating the flow of grain in feeders.

Columbian Feed Governor Co., Minneapolis, Minn.

80 **FEEDERS.** For supplying grain to grinding mills.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Great Western Mfg. Co., Leavenworth, Kan.
Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Ordway, A. F., & Sons, Beaver Dam, Wis.
Salzman Mfg. Co., Hamilton, Ohio.
Sprout, Waldron & Co., Muncy, Pa.

81 **GRAIN CLEANING MACHINES.** For cleaning seed preparatory to sowing or milling.

Barnard & Leas Mfg. Co., Moline, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Beall Improvements Co., Decatur, Ill.
Beeman & Co., Minneapolis, Minn.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Campbell, S. K., Central Bridge, N. Y.
Cardwell Machine Co., Richmond, Va.
Colton, G. D., & Co., Galesburg, Ill.
Dickey Mfg. Co., Racine, Wis.
Dubuque Turbine & Roller Mill Co., Dubuque, Iowa.
Ellis Keystone Agricultural Works, Pottstown, Pa.
Great Western Mfg. Co., Leavenworth, Kan.
Hercules Mfg. Co., Columbus, Ohio.
Howes, S., Co., Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.
Hutchison, John, Mfg. Co., Jackson, Mich.
Invincible Grain Cleaner Co., Silver Creek, N. Y.
Johnson & Field Co., Racine, Wis.
Klondike Wheat Huller Co., York, Neb.
Marseilles Mfg. Co., Marseilles, Ill.
Mitchell-Parks Mfg. Co., 1234 S. 7th St., St. Louis, Mo.
Lohr, C. W., Mfg. Co., Wayne, Mich.
Meisel Mfg. Co., Port Huron, Mich.
Messinger Mfg. Co., Tatamy, Pa.
Munson Bros., Co., Utica, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Prinz & Rau Mfg. Co., 659 E. Water St., Milwaukee, Wis.
Richmond Mfg. Co., Lockport, N. Y.
St. Albans Foundry & Implement Co., St. Albans, Vt.
Sprout, Waldron & Co., Muncy, Pa.
Twin City Separator Co., Colfax Av. S. & 29th St., Minneapolis, Minn.
Union Corn Planter Co., Peoria, Ill.
Union Iron Works, Decatur, Ill.

GRAIN CLEANING MACHINES, continued

Wheeler & Melick Machinery Co., Frankfort, N. Y.
Wilder-Strong Implement Co., Monroe, Mich.
Wolf Co., Chambersburg, Pa.

82 **FANNING MILLS.** For winnowing or separating chaff from grain by a forced current of air.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Beall Improvements Co., Decatur, Ill.
Bowen & Quick, Auburn, N. Y.
Buch's, A., Sons, Elizabethtown, Pa.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Campbell, S. K., Central Bridge, N. Y.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Dickey Mfg. Co., Racine, Wis.
Durling, A. N., Detroit, Mich.
Foster & Williams Mfg. Co., Racine, Wis.
Grant-Ferris Co., Troy, N. Y.
Great Western Mfg. Co., Leavenworth, Kan.
Harder Mfg. Co., Cobleskill, N. Y.
Hirsch Bros., 267 Reed St., Milwaukee, Wis.
Howes, S., Co.. Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.
Hutchison, John, Mfg. Co., Jackson, Mich.
Invincible Grain Cleaner Co., Silver Creek, N. Y.
Johnson & Field Co., Racine, Wis.
Marseilles Mfg. Co., Marseilles, Ill.
Meisel Mfg. Co., Port Huron, Mich.
Messinger Mfg. Co., Tatamy, Pa.
Michael, C. H., Mfg. Co., Laporte, Ind.
Nordyke & Marmon Co., Indianapolis, Ind.
Prinz & Rau Mfg. Co., 659 E. Water St., Milwaukee, Wis.
Rowell, J. S., Mfg. Co., Beaver Dam, Wis.
Sprout, Waldron & Co., Muncy, Pa.
Twin-City Separator Co., Colfax Ave. S & 29th St., Minneapolis, Minn.
Union Iron Works, Decatur, Ill.
Wolf Co., Chambersburg, Pa.

83 **HULLERS, GRAIN.**

Beall Improvements Co., Decatur, Ill.
Johnson Foundry & Machine Works, Battle Creek, Mich.

84 **MILLS, GRINDING.**

85 **Attrition.** In which the grain is ground by friction.
American Engineering Co., Springfield, Ohio.
Excel Mfg. Co., Pottersville, N. J.
Foos Mfg. Co., Springfield, Ohio.
Kelly, O. S., Western Mfg. Co., Iowa City, Iowa.
Robinson Mfg. Co., Muncy, Pa.
Sprout, Waldron & Co., Muncy, Pa.

86 **Buhr.** In which the grain is milled between two stones.

Abele, Chris. 537 W. 50th St., New York.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.

MILLS, BUHR, continued

Buckeye Feed Mill Co., Springfield, Ohio.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Cutler Co., North Wilbraham, Mass.
De Loach Mill Mfg. Co., Atlanta, Ga.
Foos Mfg. Co., Springfield, Ohio.
Iowa Grinder & Steamer Works, Waterloo, Iowa.
Kaestner & Co., 241 S. Jefferson St., Chicago, Ill.
Maish Mfg. Co., Warsaw, Ind.
Munson Bros. Co., Utica, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Richmond City Mill Works, Richmond, Ind.
Robinson Mfg. Co., Muncy, Pa.
Ross, Chas., & Son, 16 Steuben St., Brooklyn, N. Y.
Sprout, Waldren & Co., Muncy, Pa.
Stevens, A. W., Co., Marinette, Wis.
Stickney, Charles A., Co., St. Paul, Minn.
Straub Machinery Co., Storrs Sta., Cincinnati, O.
Walton, P. M., 1023 Germantown Ave., Philadelphia, Pa.
Wilson Bros., Easton, Pa.

87 **Roller.** In which the grain is crushed between horizontal rollers.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Case Mfg. Co., Columbus, Ohio.
Dehner-Wuerpel Mill Building Co., 1607 S. 3d St., St. Louis, Mo.
Dubuque Turbine & Roller Mill Co., Dubuque, Iowa.
Great Western Mfg. Co., Leavenworth, Kan.
Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Hutchison, John, Mfg. Co., Jackson, Mich.
Maish Mfg. Co., Warsaw, Ind.
Meisel Mfg. Co., Port Huron, Mich.
Munson Bros. Co., Utica, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Richmond City Mill Works, Richmond, Ind.
Robinson Mfg. Co., Muncy, Pa.
Ross, Chas., & Son, 16 Steuben St., Brooklyn, N. Y.
Salem Machine Works, Salem, Va.
Schutz-O'Neill Co., Minneapolis, Minn.
Sprout, Waldron & Co., Muncy, Pa.
Starr, B. F., & Co., North & Centre Sts., Baltimore, Md.
Straub Machinery Co., Storrs Sta., Cincinnati, O.
Wolf Co., Chambersburg, Pa.
Ypsilanti Machine Works, Ypsilanti, Mich.

88 GRANULATORS. For grinding screenings.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.

89 **MIXERS.** For mixing flour of different grades.

Barnard & Leas Mfg. Co., Moline, Ill.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Great Western Mfg. Co., Leavenworth, Kansas.

MIXERS, continued

Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Nordyke & Marmon Co., Indianapolis, Ind.
Walker & Elliott, Wilmington, Del.

90 **PACKERS.** For packing flour, bran, etc.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Howes, S., Co., Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.
Invincible Grain Cleaner Co., Silver Creek, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Richmond City Mill Works, Richmond, Ind.
Ross, Chas., & Son, 16 Steuben St., Brooklyn, N. Y.
Salem Machine Works, Salem, Va.
Sprout, Waldron & Co., Muncy, Pa.
Wolf Co., Chambersburg, Pa.

91 **PEARLING MACHINES.** For removing the outer coat of grain as in making pearl barley.

Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.

92 **POLISHING MACHINES.** Oatmeal, Malt, etc.

Barnard & Leas Mfg. Co., Moline, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Beall Improvements Co., Decatur, Ill.
Huntley Mfg. Co., Silver Creek, N. Y.
Invincible Grain Cleaner Co., Silver Creek, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Wolf Co., Chambersburg, Pa.

93 **PURIFIERS.** For removing foreign matter from flour.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Case Mfg. Co., Columbus, Ohio.
Dubuque Turbine & Roller Mill Co., Dubuque, Iowa.
Great Western Mfg. Co., Leavenworth, Kan.
Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Harmon-Whitmore Co., Jackson, Mich.
Hess Warming & Ventilating Co., 709 Tacoma Building, Chicago, Ill.
Knickerbocker Co., Jackson, Mich.
Maish Mfg. Co., Warsaw, Ind.
Meisel Mfg. Co., Port Huron, Mich.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Ordway, A. F., & Sons, Beaver Dam, Wis.
Richmond City Mill Works, Richmond, Ind.
Robinson Mfg. Co., Muncy, Pa.
Salem Machine Works, Salem, Va.
Sprout, Waldron & Co., Muncy, Pa.
Wolf Co., Chambersburg, Pa.

94 **REELS, BOLTING.** Reels covered with bolting cloth and used for separating products as in a flouring mill.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.

REELS, BOLTING, continued

Case Mfg. Co., Columbus, Ohio.
Great Western Mfg. Co., Leavenworth, Kans.
Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Hutchison, John, Mfg. Co., Jackson, Mich.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Richmond City Mill Works, Richmond, Ind.
Robinson Mfg. Co., Muncy, Pa.
Straub Mchy. Co., Storrs Sta., Cincinnati, O.
Wolf Co., Chambersburg, Pa.

94A **REGISTERS, GRAIN.** For measuring grain.

Advance Thresher Co., Battle Creek, Mich.
Champion Thresher Co., Orrville, O.
Huber Mfg. Co., Marion, O.
Miller, Wm. S., Meyersdale, Pa.
Nesmith, C. L., Washington, Ill.
Nichols & Shepard Co., Battle Creek, Mich.
Nordyke & Marmon Co., Indianapolis, Ind.
Port Huron Engine & Thresher Co., Port Huron, Mich.

95 **SAMPLERS, GRAIN.** For taking small quantities of grain to be sampled, as from a car load.

Minneapolis Steel & Mchy. Co., Minneapolis, Minn.
Webster Mfg. Co., 1075 W. 15th St., Chicago, Ill.

96 **SCALPERS, GRADERS AND DRESSERS COMBINED.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Barnard & Leas Mfg. Co., Moline, Ill.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland, O.
Case Mfg. Co., Columbus, Ohio.
Great Western Mfg. Co., Leavenworth, Kans.
Griscom & McFeely, 521 N. 23d St., Philadelphia, Pa.
Howes, S., Co., Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.
Maish Mfg. Co., Warsaw, Ind.
Meisel Mfg. Co., Port Huron, Mich.
Nordyke & Marmon Co., Indianapolis, Ind.
Noye Mfg. Co., Buffalo, N. Y.
Prinz & Rau Mfg. Co., 659 E. Water St., Milwaukee, Wis.
Sprout, Waldron, & Co., Muncy, Pa.

97 **SCOURERS.** See 81. Grain Cleaning Machines.

98 **SCREENS.** See 72, Bolters.

99 **SEPARATORS, GRAIN.** See 81, Grain Cleaning Machines.

100 Magnetic. In which a magnet attracts foreign substances such as nails, etc., and so separates them from the grain.

Bartlett, C. O., & Snow, Co., French & Winter Sts., Cleveland, O.
Howes, S., Co., Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.
Invincible Grain Cleaner Co., Silver Creek, N. Y.
Noye Mfg. Co., Buffalo, N. Y.
Robinson Mfg. Co., Muncy, Pa.
Sprout, Waldron & Co., Muncy, Pa.

101 **SIEVES.** For separating the finer from the coarser particles of flour.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Aultman Co., Canton, Ohio.
Barnard & Leas Mfg. Co., Moline, Ill.
Case Mfg. Co., Columbus, Ohio.
Closz & Howard Mfg. Co., Webster City, Ia.
Ditch Adjustable Sieve Co., Mansfield, O.
Great Western Mfg. Co., Leavenworth, Kans.
Sprout, Waldron & Co., Muncy, Pa.
Van Wye Adjustable Sieve Co., Wichita, Kans.

102 **SIFTERS.** See 72, Bolters.

103 **SMUTTERS.** See 81, Grain Cleaning Machines.

104 **STEAMERS, WHEAT, ETC.** See 76, Grain Driers.

105 **TEMPERERS, WHEAT.** See 76, Grain Driers.

106 **TESTERS, GRAIN.** See 95, Samplers, Grain.

SECTION VIII

WOOD WORKING MACHINERY

INDEX TO DEPARTMENTS.

	Page.
Barrel Machinery	615
Box and Crate Machinery	619
Chair Machinery	623
Pail and Tub Machinery	626
Saws, Knives, Saw Tools, Etc.	628
Saw Mill Machinery	641
Wheel Machinery	662
Wood Working Machinery in General	665

MANUFACTURERS OF

WOODWORKING MACHINERY.

Alphabetical Index.

Abbott & Co., Hudson, Mich.—Hub Boring Machines.
Adams Bros., Co., Findlay, O.—Saw Mill Carriages.
Adams, S., & Son, Rome, N. Y.—Saw Mill Machinery.
Adams, W. T., Machine Co., Corinth, Miss.—Saw Mill Machinery.
Allis-Chalmers Co., N. Y. Life Bldg., Chicago, Ill.—Saw Mill Mchy.
Almond, Jos. E., Montpelier, Vt.—Molding Sanders.
American Seeding Machine Co., Springfield, O.—Saw Mill Machinery.
American Steam Pump Co., Battle Creek, Mich.—Carving Machines, Lathes, etc.
American Wood Working Machinery Co., 136 Liberty St., New York.—Planing Mill, Sash, Blind and Door Machinery. *See adv. page 91.*
Anderson Knife & Bar Co., Anderson, Ind.—Machine Knives
Andrew, M. L., & Co., 118 W. 2d St., Cincinnati, O.—Boring and Mortising Machines, etc.
Andrews & Son, Williamsport, Pa.—Saw Knives and Saw Tools.
Appleton Mfg. Co., Batavia, Ill.—Saw Blades.
Atkins, E. C., & Co., Indianapolis, Ind.—Saw Mill Machinery.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.—Saw Mill Machinery.
Aultman & Taylor Mchy. Co., Mansfield, O.—Saw Mill Machinery.
Austin & Eddy, 115 Broad St., Boston, Mass.—Mortisers, Moulding Sanders.
Bailey & Blendinger, Woburn, Mass.—Machine Knives.
Baker Bros., Toledo, O.—Planers, Saw Benches and Machines.
Baldridge & Hogan, Saw Co., 7 Vine St., Cincinnati, O.—Saw Blades and Swages.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.—Saw Knives and Tools, etc.
Ball Bearing Machinery Co., Cincinnati, O.—Foot Power Formers.
Bancroft, Frank H., 210 N. Main St., Gardner, Mass.—Back Benders.
Bangor Edge Tool Co., Bangor, Me.—Saw Mill Dogs.
Bangor Foundry & Machine Co., Bangor, Me.—Saw Mill Machinery.
Barbour-Stockwell Co., Cambridgeport, Mass.—Vises.
Barcus Bros., Muskegon, Mich.—Saw Blades.
Barnes Mfg. Co., Lanesboro, Pa.—Circular Saw Mills.
Barnes, W. F., & John Co., Rockford, Ill.—Saws, Lathes, etc. *See adv. page 93.*
Barnes Tool Co., New Haven, Conn.—Saw Machines, Benches, etc.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.—Saws, Knives, Mandrels, etc.
Bartlett, A. F., & Co., Saginaw, Mich.—Edgers.
Bartley, Wm., & Sons, Bartley, N. J.—Saw Mill Machinery.
Batavia Clamp Co., Batavia, N. Y.—Joiners' Clamps.

Baxter Machine Co., Lebanon, N. H.—Moulding Machines, Planers. *See adv. page 89.*
Beach, H. W., Montrose, Pa.—Saw Benches, Machines, etc.
Bein, E. J., 199 High St., Newark, N. J.—Belt Sanders. *See adv. page 98.*
Benson, A. M., 102 Canal St., Cleveland, O.—Barrel Machinery.
Bentel & Margedant Co., Hamilton, O.—Planers, Smoothing and Boring Machines. *See adv. page 87.*
Berlin Machine Works, Beloit, Wis.—Lumber, Flooring, Moulding Machines, etc.
Best, John (Estate of), Lancaster, Pa.—Saw Mill Machinery.
Black Bros. Machy. Co., Mendota, Ill.—Mortising Machines, Veneer Presses, etc.
Blaisdell, P., & Co., Worcester, Mass.—Pattern Makers' Lathes. *See adv. page 60.*
Boomer & Boschert Press Co., Syracuse, N. Y.—Veneer Presses.
Booth, O. N., & Co., Monroeton, Pa.—Portable Saw Mills, Wood Turning Lathes.
Brady, M. E., & Co., Manistee, Mich.—Gang Edgers.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.—Saws, Knives and Saw Tools.
Broadhead, Joseph, Manistee, Mich.—Saws, Knives and Saw Tools.
Buckeye Saw Mfg. Co., Columbus, O.—Gang Saw Blades.
Builders Iron Foundry, Providence, R. I.—Saw Gummers, Planer Grinders.
Burpee & Letson, Ltd., Bellingham, Wash.—Shingle Machines.
Bushnell Press Co., Thompsonville, Conn.—Veneer Presses.
Buss Machinery Co., Muskegon, Mich.—Planers, Rod Machines, etc.
Butterworth & Lowe, Grand Rapids, Mich.—Saw Mill Machinery.
California Saw Works, 208-212 Mission St., San Francisco, Cal.—Saw Blades, Gummers, Mills, etc.
Canton Saw Co., Canton, O.—Saw Blades, Saw Mill Dogs, etc.
Capital Machine Works, Indianapolis, Ind.—Planer Grinders, Veneer Cutting Machines.
Capitol City Machine Works, Columbus, O.—Mandrels, Belt Sanding Machines.
Carey, W. W., Lowell, Mass.—Moulding and Shaping Machines, etc.
Carey Mfg. Co., 19 Roosevelt St., New York.—Box Fasteners.
Challenge Wind Mill & Feed Mill Co., Batavia, Ill.—Saw Benches.
Challoner Co., Oshkosh, Wis.—Gang Edgers.
Chambers Patent Barrel Heater Co., St. Louis, Mo.—Barrel Heaters.
Chandler & Taylor Co., Indianapolis, Ind.—Saw Mill Machinery.
Chase Turbine Mfg. Co., Orange, Mass.—Chair and Saw Mill Mchy.
Chattanooga Mchy. Co., Chattanooga, Tenn.—Barrel, Chair and Saw Mill Machinery.
Cincinnati Tool Co., Cincinnati, O.—Boring Machines, Clamps, Spoke Shavers.
Clark Bros., Belmont, N. Y.—Saw Mill Machinery.
Cleveland Machine Knife Co., Cleveland, O.—Machine Knives, Veneer Knives.
Cleveland Stone Co., Cleveland, O.—Saw Gummers.
Clough & Witt Machine Co., Cleveland, O.—Barrel Machinery.
Cocker, Wm., Lockport, N. Y.—Saw Blades.
Coe Mfg. Co., Painesville, O.—Veneer Machines.
Coes, Loring, & Co., Inc., Worcester, Mass.—Machine Knives. *See adv. page 82.*
Colburn Machine Tool Co., Franklin, Pa.—Universal Saw Benches.
Cole Mfg. Co., Lakeport, N. H.—Planers. *See adv. page 98.*

Colladay, Jos. O., 626 Race St., Philadelphia, Pa.—Moulding Machines, Planers, etc.
Collins, F. F., Mfg. Co., San Antonio, Tex.—Saw Blades.
Comstock, Geo. S., Mechanicsburg, Pa.—Saw Mill Machinery.
Concord Machine Co., Concord, N. H.—Crimpers.
Connell & Dengler Machine Co., Rochester, N. Y.—Box and Crate Machinery, etc.
Cooper, C. & J., Mt. Vernon, O.—Portable Saw Mills.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, O.—Boring, Grinding Machines, Planers, etc.
Cordesman Machine Co., Cincinnati, O.—Universal Wood Workers, Saws, etc.
Covel Mfg. Co., 8 S. Canal St., Chicago, Ill.—Saws, Knives and Saw Tools.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.—Rod, Pin and Dowel Machines, etc. *See adv. page 100.*
Crane, Jos. A., & Co., Rochester, N. Y.—Core Box Machines.
Crescent Machine Co., Leetonia, O.—Saw Benches, Machines, etc.
Crescent Machine Works, Grand Rapids, Mich.—Rod, Pin and Dowel Machines.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.—Boring, Flooring Machines, etc.
Crowell, D. J., 200 Terrace St., Buffalo, N. Y.—Saw Swages.
Curtis & Co. Mfg. Co., St. Louis, Mo.—Saws, Knives and Saw Tools.
Davenport Foundry & Machine Co., Davenport, Ia.—Gang Edgers.
Davis, Geo. E., Dubuque, Ia.—Shingle Machines.
Decker, E. F., Church and Bleecker Sts., Albany, N. Y.—Saws, Knives and Saw Tools.
Defiance Machine Works, Defiance, O.—Saw Mill Machinery, etc.
De Loach Mill Mfg. Co., Atlanta, Ga.—Saw Mill Machinery.
Denning, John P., Terre Haute, Ind.—Embossing Machines.
Dennis Machine Co., Jackson, Mich.—Wheel Machinery, Planers, etc.
Detrick & Harvey Machine Co., Baltimore, Md.—Band Saw Filers and Setting Machines.
Detroit Edge Tool Works, Detroit, Mich.—Machine Knives.
Diamond Iron Works, Minneapolis, Minn.—Saw Mill Machinery.
Diamond Machine Co., Providence, R. I.—Knife Grinders, etc. *See adv. page 76.*
Disston, Henry, & Sons, Inc., Philadelphia, Pa.—Saw Mill Machinery.
Dodds, Alexander, Grand Rapids, Mich.—Dovetailing and Moulding Machines, etc.
Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.—Box and Crate Mchy.
Dovetail Box Machine Co., St. Paul, Minn.—Back Tenoning and Embossing Machines.
Dowd's, John, Sons, East Lee, Mass.—Machine Knives.
Dowd, R. J., Knife Works, Beloit, Wis.—Machine Knives.
Driver, C. H., 1404 16th St., Racine, Wis.—Sanders, Sand Papering Machines.
Duplex Mfg. Co., South Superior, Wis.—Circular Saw Machines.
Duplex Roller Bushing Co., Belfast, Me.—Stave Jointers, Circular Saw Mills.
Du Quoin Iron Works, Du Quoin, Ill.—Veneer Machines.
Dutchess Tool Co., Fishkill-on-Hudson, N. Y.—Tenoning Machines.
Eddy, W., Plow Co., Greenwich, N. Y.—Circular Saw Machines.
Edge, Frank, & Co., Grand Rapids, Mich.—Saws, Knives and Saw Tools.
Edwards, M. L., Salem, O.—Circular Saw Mills.
Edwards Mfg. Co., Laceyville, Pa.—Log Turners.
Elgin Wind Power & Pump Co., Elgin, Ill.—Circular Saw Machines.

Elliott, George E., Calais, Me.—Gang Edgers, Lath Mills.
Elliott & Stutzman, Williamsport, Pa.—Panel Raisers, Saw Benches.
Ellis Keystone Agricultural Works, Pottstown, Pa.—Circular Saw Machines.
Emerson, Smith, & Co., Ltd., Beaver Falls, Pa.—Saws, Knives and Saw Tools.
Emmert Mfg. Co., Waynesboro, Pa.—Vises.
Empire Agricultural Works, Cobleskill, N. Y.—Drag Saw Mills, Circular Saw Machines.
Enterprise Mfg. Co., Columbiana, O.—Portable Saw Mills.
Eureka Bark Mill Co., Lancaster, Pa.—Circular Saw Mills.
Ewart, Samuel F., Pittsburg, Pa.—Cut Off Saw Machines.
Fairbanks Co., Broome & Elm Sts., New York.—Saw Benches.
Farquhar, A. B., Co., Ltd., York, Pa.—Saw Mill Machinery.
Farrell Foundry & Machine Co., Ansonia, Conn.—Veneer Machines.
Farwell, F. E., Fitchburg, Mass.—Saw Blades, Cutters, etc.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.—Planers, Floorers, Molders, etc. *See adv. pages 77, 78, 79, 80.*
Fay & Scott, Dexter, Me.—Lathes.
Filer & Stowell Co., Ltd., Milwaukee, Wis.—Saw Mill Machinery.
Fischer Machine Works, 345 S. Canal St., Chicago, Ill.—Dovetailing Machines, Planers, etc.
Fisher & Davis, St. Louis, Mo.—Saw Mill Machinery.
Fitchburg Machine Works, Fitchburg, Mass.—Lathes.
Flagg, J., & Son, Dover, N. H.—Machine Knives.
Folding Saw Machine Co., 16-18 S. Clinton St., Chicago, Ill.—Circular Saw Mills.
Ford Auger Bit Co., Holyoke, Mass.—Machine Bits.
Fox, J. E., Saw Works, 900 1st Ave., Seattle, Wash.—Saws, Knives, etc.
Fox Machine Co., Grand Rapids, Mich.—Machine Knives, Boring Machines, etc.
Francis, Chas. E., & Bro., 423 E. 8th St., Cincinnati, O.—Veneer Presses, Glue Heaters, etc.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.—Knife Grinding Machines, Planers, etc.
Frary, H. H., Berlin, N. Y.—Lathes.
Frick Co., Waynesboro, Pa.—Saw Mill Machinery.
Furniture City Vise Co., Ltd., Grand Rapids, Mich.—Vises.
Gaar, Scott & Co., Richmond, Ind.—Saw Mill Machinery.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.—Boring Machines.
Gardner Machine Works, Gardner, Mass.—Machine Knives, etc. *See adv. page 100.*
Garland, M., Co., Bay City, Mich.—Saw Mill Machinery.
Geiser Mfg. Co., Waynesboro, Pa.—Circular Saw Mills.
Gerlach, Peter, Co., Cleveland, O.—Saw Blades.
Gibbes, W. H., & Co., Columbia, S. C.—Shingle Machines.
Giddings & Lewis, Mfg. Co., Fond du Lac, Wis.—Saw Mill Machinery.
Gilman & Son, Springfield, Vt.—Lathes.
Gleason, J. M., Hamilton, O.—Picket Machines.
Goodspeed Machine Co., Winchendon, Mass.—Pail, Tub and Chair Machinery. *See adv. page 98.*
Gordon Hollow Blast Grate Co., Greenville, Mich.—Lumber Trimmers.
Gould & Eberhardt, Newark, N. J.—Mortising Machines.
Grammes, L. F., & Sons, Allentown, Pa.—Box and Crate Machinery.
Grand Rapids Hand Screw Co., Grand Rapids, Mich.—Work Benches.
Gray's, A. W., Sons, Middletown Springs, Vt.—Saw Machines.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.—Boring, Flooring and Moulding Machines, etc.

Greenleaf Wood Working Machine Co., Baltimore, Md.—Planers and Matchers. *See adv. page 90.*
Greenlee Bros. & Co., 225 W. 12th St., Chicago, Ill.—Boring Machines, Planers, etc.
Gregg, M., & Sons, Rochester, N. Y.—Machine Knives.
Griffin, G. W., & Co., Franklin Falls, N. H.—Saw Machines.
Hall & Brown, Wood Working Machine Co., St. Louis, Mo.—Box and Crate Machinery, Planers, etc.
Ham, L. M., & Co., 152 Portland St., Boston, Mass.—Circular Saw Machines.
Hampden Corundum Wheel Co., Springfield, Mass.—Planer Knife Grinders.
Hanchett Swage Works, Big Rapids, Mich.—Saw Swages.
Hankey, A., & Co., Rockdale, Mass.—Saws, Knives, etc. *See adv. page 100.*
Hardisty & Co., Cincinnati, O.—Machine Knives, etc.
Hardy, L., & Co., Worcester, Mass.—Machine Knives.
Hastings & Co., 9 Railroad Pl., Newark, N. J.—Saw Blades.
Hayes, E. B., Machine Co., Oshkosh, Wis.—Boring, Flooring Machines, Planers, etc.
Heald Machine Co., Worcester, Mass.—Saw Machines.
Heath, W. A., Machine Co., Lestershire, N. Y.—Planers.
Heilman Machine Works, Evansville, Ind.—Saw Mill Machinery.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.—Saw Mill Machinery.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.—Mining Timber Machines.
Hendy, Joshua, Machine Works, San Francisco, Cal.—Sash and Blind Machinery.
Hench & Dromgold, York, Pa.—Circular Saw Mills.
Hermance Machine Co., Williamsport, Pa.—Planers, Saw Benches, etc.
Herrick, Chas. R., Northampton, Mass.—Circular Saw Mills.
Hibbard, G. B., Mfg. Co., Grand Rapids, Mich.—Boring Machine Augers.
Hildreth Bros., Harvard, Mass.—Saw Benches.
Hiles, C. A., & Co., 14th St. & Western Ave., Chicago, Ill.—Saws, Knives.
Hill, Wm. E., & Co., Kalamazoo, Mich.—Saw Mill Machinery.
Hillstrom Machine Co., Michigan City, Ind.—Band Saw Filers.
Hinckley & Egery Iron Co., Bangor, Me.—Circular Saw Mills.
Hobbs Mfg. Co., Worcester, Mass.—Knife Grinding Machines, Planers.
Hodgkins, C. & A., Co., Marlboro, N. H.—Planers, etc.
Hoe, R., & Co., 504 Grand St., New York.—Saw Mill Machinery.
Holbrook-Armstrong Iron Co., Racine, Wis.—Wheel Machinery.
Holmes, E. & B., Mchy. Co., 59 Chicago St., Buffalo, N. Y.—Matchers, Planers, Windlasses, etc. *See adv. page 83.*
Holmes, L. A., New Haven, Conn.—Shoe Box Machines.
Holyoke Bar Co., Holyoke, Mass.—Machine Knives.
Horne, J. H., & Sons, Co., Lawrence, Mass.—Machine Knives.
Howell, R. R., & Co., Minneapolis, Minn.—Saw Mill Machinery.
Hubbard's, Norman, Sons, 265 Water St., Brooklyn, N. Y.—Veneer Machines.
Humphrey Machine Co., Keene, N. H.—Planers.
Huther Bros., Rochester, N. Y.—Circular Saw Blades, etc. *See adv. page 81.*
Indiana Machine Works Co., Fort Wayne, Ind.—Planers.
Indianapolis Excelsior Manufactory, Indianapolis, Ind.—Excelsior Machinery.
International Box Hinging Machine Co., 40 New St., New York.—Box Hinging Machines.

Irwin Auger Bit Co., Wilmington, O.—Boring Machine Augers.
Jackson & Church Co., Saginaw, Mich.—Refuse Conveyors.
Jeffrey Mfg. Co., Columbus, O.—Saw Mill Machinery.
Jennings, C. E., & Co., 101 Reade St., New York.—Boring Machine Augers.
Johnson, T., 206 N. Carpenter St., Chicago, Ill.—Barrel Machinery.
Jones, Winfred E., Rochester, N. Y.—Cutting Gages.
Kane & Roach, Syracuse, N. Y.—Wheel Machinery.
Keebner & Sons, Lansdale, Pa.—Edgers.
Kehoe, Wm., & Co., Savannah, Ga.—Edgers.
Kellogg, Wm. P., Troy, N. Y.—Boring Machines.
Keystone Iron Works, Fort Madison, Ia.—Edgers.
Kidder, R. E., 35 Hermon St., Worcester, Mass.—Saw Benches.
Kilborn & Bishop Co., New Haven, Conn.—Saw Sets.
Kimball Bros. & Sprague, Brockton, Mass.—Lathes .
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.—Saw Mill Mchy.
Kline, Lewis T., Alpena, Mich.—Saw Mill Machinery.
Klotz Machine Co., Sandusky, O.—Saw Machines and Lathes.
Knapp Dovetailing Machine Co., Florence, Mass.—Dovetailing Machines.
Knight Mfg. Co., Canton, O.—Saw Mill Machinery.
Lamson Cutter Head Co., 27 S. Canal St., Chicago, Ill.—Dado Heads.
Lancaster Machine & Knife Works, Lancaster, N. Y.—Machine Knives.
Lancaster Peerless Emery Wheel Co., Lancaster, Pa.—Saw Gummers.
Lane & Bodley Co., Cincinnati, O.—Band Saw Mills.
Lane Mfg. Co., Montpelier, Vt.—Shingle and Lath Mill Machinery, Saw Mills, etc. *See adv. pages 96-97.*
Lansing Boiler & Engine Works, Lansing, Mich.—Lath Mills, Saw Mills.
Lanterman & Hague, Chicago, Ill.—Machine Knives.
Larzelere Machine Co., Williamsport, Pa.—Saw Mill Machinery.
Leitelt, Adolph, Iron Works, Grand Rapids, Mich.—Veneer Cutting Machines.
Liddell Co., Charlotte, N. C.—Saw Mills, Planers, etc.
Linderman Mfg. Co., Inc., Whitehall, Mich.—Glue Jointers.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.—Saw Mill Machinery.
Link, E. M., Machinery Co., Erie, Pa.—Saw Mill Machinery.
Livermore Foundry & Machine Co., Memphis, Tenn.—Saw Mills.
Loetscher, A. A., Dubuque, Ia.—Clamps.
Lombard Iron Works & Supply Co., Augusta, Ga.—Saw Mills, Planers.
Lovejoy, D., & Son, Lowell, Mass.—Machine Knives.
Lovell Machine Works, Fitchburg, Mass.—Saw Mill Machinery.
Loyd, John, Co., Water St., New York.—Machine Knives.
Luther, B. G., & Co., Worcester, Mass.—Saw Mills and Box Machinery. *See adv. pages 94-95.*
Lyon Iron Works, Greene, N. Y.—Saw Mill Machinery.
McDonough Mfg. Co., Eau Claire, Wis.—Saw Mills, Band Saws, etc.
McEwen Bros., Wellsville, N. Y.—Circular Saw Mills.
McKnight, L. G., & Co., Gardner, Mass.—Chair Machinery, etc.
McLain, J. H., Co., Canton, O.—Cord Wood Saw Mills.
McNiece, Wm., & Son, 515 Cherry St., Philadelphia, Pa.—Saw Blades.
Mack & Co., Rochester, N. Y.—Machine Knives.
Mankato Mfg. Co., Mankato, Minn.—Saw Mills.
Marseilles Mfg. Co., Marseilles, Ill.—Circular Saw Machines.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.—Band and Circular Saws, etc. *See adv. page 93.*
Massachusetts Saw Works, Springfield, Mass.—Saw Blades.
Mattison, C., Machine Works, Beloit, Wis.—Dado Heads, Lathes.

Mecklenburg Iron Works, Charlotte, N. C.—Saw Mill Machinery.
Memphis Machine Works, Memphis, Tenn.—Saw Mill Machinery.
Merrill Iron Works, Merrill, Wis.—Saw Mills and Excelsior Machinery.
Merritt Mfg. Co., Lockport, N. Y.—Knife Grinders, Veneer Machines.
Mershon, W. B., & Co., Saginaw, Mich.—Saws, Knives, etc.
Messinger Mfg. Co., Tatamy, Pa.—Cut Off Saw Machines.
Michels, J., & Co., Detroit, Mich.—Barrel Machinery.
Michigan Iron Works, Grand Rapids, Mich.—Edgers, Veneer Machines.
Michigan Saw Co., Saginaw, Mich.—Saw Blades.
Millers Falls Co., Millers Falls, Mass.—Boring Machines.
Mitchell, Lewis, & Staver Co., Seattle, Wash.—Shingle Machines.
Mitts & Merrill, Saginaw, Mich.—Saws, Knives, etc.
Mixter, J. W., & Co., Plymouth, Mass.—Saws, Knives, etc.
Moeller, Herman, 187 W. 20th St., Chicago, Ill.—Cigar Box Mchy.
Moore Carving Machine Co., Minneapolis, Minn.—Carving Machines.
Moore, Frank K., 145 Oliver St., Boston, Mass.—Back Rests. *See adv. page 98.*
Morgan Machine Co., Rochester, N. Y.—Box and Crate Machinery.
Mosely Lathe Co., Elgin, Ill.—Carving Machines.
Moshannon Mfg. Co., Philipsburg, Pa.—Moulding and Shaping Machines.
Murray Iron Works, Burlington, Ia.—Edgers.
Muskegon Boiler Works, Muskegon, Mich.—Refuse Conveyors.
Narragansett Machine Co., Providence, R. I.—Foot Power Machinery.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.—Boring and Cutting Off Machines.
National Saw Co., Newark, N. J.—Saws and Saw Tools, etc.
Nevin & Wetmore Iron Works, Lowville, N. Y.—Saw Machines.
New Birdsall Co., Auburn, N. Y.—Saw Mills.
New Britain Machine Co., New Britain, Conn.—Mortising Machines, etc. *See adv. page 86.*
New Haven Mfg. Co., New Haven, Conn.—Lathes.
Nichols Dryer Co., Cincinnati, O.—Veneer Machines.
Nichols, W. E., Machine Works, Winchendon, Mass.—Mortising Machines.
Northampton Emery Wheel Co., Leeds, Mass.—Grinders.
Norton & Cole Mchy. Co., Cincinnati, O.—Saw Mills.
Novelty Iron Works, Dubuque, Ia.—Saw Mill Machinery.
Ober Mfg. Co., Chagrin Falls, O.—Edge Moulding and Shaping Machines, etc.
Ohio Brass Co., Mansfield, O.—Saw and Dado Machines.
Ohio Knife Co., Cincinnati, O.—Machine Knives.
Ohio Tool Co., Columbus, O.—Machine Knives, etc.
Ohlen, Jas., & Sons, Saw Mfg. Co., Columbus, O.—Saws, Knives, etc.
Oldham, Joshua, & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.—Machine Knives, Saws, etc.
Oliver Machinery Co., Grand Rapids, Mich.—Lathes, Planers, etc.
Oram, John S., Cleveland, O.—Barrel Machinery.
Orum, M. L., 503 N. 11th St., Philadelphia, Pa.—Shaper Cutter Heads.
Pacific Saw Mfg. Co., San Francisco, Cal.—Machine Knives, Saws, etc.
Pawling & Harnischfeger, Milwaukee, Wis.—Steam Carriage Feeds.
Peck, Stow & Wilcox Co., Southington, Conn.—Saw Sets.
Pekin Gas Heating Co., Pekin, Ill.—Barrel Heaters.
Perkins & Co., Grand Rapids, Mich.—Saw Mill Machinery.
Phoenix Mfg. Co., Eau Claire, Wis.—Saw Mill Machinery.
Porbeck Bros. Mfg. Co., St. Louis, Mo.—Saw Dust Conveyors.
Porter, C. O. & A. D., Grand Rapids, Mich.—Lathes, etc.
Port Huron Saw Co., Ltd., Port Huron, Mich.—Saws, Knives, etc.
Potts, C. & A., Co., Indianapolis, Ind.—Portable Saw Mills.

Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.—Boring, Flooring Machines, Planers, etc.
Prescott, D., Clint Co., Menominee, Wis.—Saw Mill Machinery.
Pringle & Brodie Machinery Co., 277 S. Canal St., Chicago, Ill.—Lathes, Belt Sanding Machines, etc.
Pryibil, P., 512 W. 41st St., New York.—Planers, Saw and Dado Machines, etc. *See adv. page 88.*
Pugh, Job T., 31st & Ludlow Sts., Philadelphia, Pa.—Boring Machine Augers.
Putnam Machine Co., Fitchburg, Mass.—Lathes.
Ralya Saw Co., Middletown, Ind.—Saw Blades.
Randle Mchy. Co., 206 Water St., Cincinnati, O.—Saw Mills, etc.
Reed, F. E., Co., Worcester, Mass.—Lathes.
Reeves & Co., Columbus, Ind.—Saw Mill Machinery.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.—Saws, Knives.
Richmond Machine Works, Richmond, Ind.—Saw Mill Machinery.
Riverside Machine Works, Kokomo, Ind.—Saw Gummers and Swages.
Robertson Mfg. Co., 1848 Niagara St., Buffalo, N. Y.—Planer Knife Grinders.
Robinson & Co., Richmond, Ind.—Saws, Knives, etc.
Rockwood Mfg. Co., Indianapolis, Ind.—Log Turners, Saw Mills, etc.
Roesch, Fred., Little Rock, Ark.—Lumber Buggies.
Rogers Iron Mfg. Co., Muskegon, Mich.—Lath Mills, etc.
Rogers, S. C., & Co., Buffalo, N. Y.—Saws, Knives, etc.
Ross, E. W., Co., Springfield, O.—Saw Machines.
Ross, Josiah, Buffalo, N. Y.—Knife Grinders, Planers, etc.
Royle, John, & Sons, Paterson, N. J.—Edgers, Saw Benches.
Runge Mfg. Co., Meriden, Conn.—Joiners' Bench Blocks.
Russell & Co., Massillon, O.—Saw Mills, Edgers, etc.
Safety Emery Wheel Co., Springfield, O.—Planer Grinders.
Saginaw Mfg. Co., Saginaw, Mich.—Re-Sawing Machines.
Salem Iron Works, Salem, N. C.—Saw Mills, Planers, etc.
Scott, Olin, Bennington, Vt.—Edgers.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.—Saws, Lathes, etc. *See adv. page 81.*
Sergent Mfg. Co., Greensboro, N. C.—Saw Mills.
Seymour & Whitlock, Newark, N. J.—Boring, Dovetailing Machines.
Shawver Co., Springfield, O.—Twist Machines, Oval Cutters, etc.
Sheip, Henry M., Mfg. Co., 529 Columbia Ave., Philadelphia, Pa.—Trimming Machines.
Sherman, W. S., Co., Milwaukee, Wis.—Boring Machines, etc.
Shimer, Samuel J., & Sons, Milton, Pa.—Moulding Machines, etc.
Silver Mfg. Co., Salem, O.—Boring Machines, etc.
Simmonds & Wellford, Memphis, Tenn.—Heading-Up Machines.
Simonds, A. A., & Son, Dayton, O.—Knives, Saws, etc.
Simonds Mfg. Co., Fitchburg, Mass.—Saws, Machine Knives, etc. *See adv. page 82.*
Sinker-Davis Co., Indianapolis, Ind.—Saw Mill Machinery.
Smalley Mfg. Co., Manitowoc, Wis.—Saw Mills.
Smith, H. B., Machine Co., Smithville, N. J.—Saw Mill Machinery.
Smith, I. L., Evansville, Ind.—Saw Gages.
Smith, Philip, Sidney, O.—Saw Machines.
Smith, Seymour, & Son, Oakville, Conn.—Saw Sets, Spoke Shavers.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.—Saws, Knives, etc.
Smith & Phillips Mfg. Co., 99 W. Adams St., Chicago, Ill.—Window Frame Pocket Cutters.
Snell Mfg. Co., Fiskdale, Mass.—Boring Machines, etc.
Snell & Atherton, Brockton, Mass.—Machine Knives.

Soule Steam Feed Works, Meridian, Miss.—Saw Mill Machinery.
Southern Saw Works, Atlanta, Ga.—Saws and Saw Blades.
Spangler Mfg. Co., York, Pa.—Portable Saw Mills.
Specialty Mfg. Co., 23 Canal St., Grand Rapids, Mich.—Saw Gages.
Springfield Mfg. Co., Bridgeport, Conn.—Planer Grinders.
St. Albans Foundry Co., St. Albans, Vt.—Saw Machines.
Stamm Machine Works, Aurora, Ind.—Saws, Knives, etc.
Standard Saw Mill Mchy. Co., Erie, Pa.—Saw Mill Machinery.
Standard Tool Co., Cleveland, O.—Machine Bits.
Standish, A., Spring & Water Sts., Columbus, O.—Polishing Machines.
Star Mfg. Co., Carpentersville, Ill.—Saw Machines.
Stearns, E. C., & Co., Syracuse, N. Y.—Spoke Tenoning Machines.
Stearns Mfg. Co., Erie, Pa.—Saw Mill Machinery.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn.—Saw Dust and Refuse Conveyors. *See adv. page 82.*
Sterling Emery Wheel Mfg. Co., Tiffin, O.—Planer Grinders.
Stover Mfg. Co., Freeport, Ill.—Saw Mills.
Stow Mfg. Co., Binghamton, N. Y.—Boring Machines, etc.
Strait, H. N., Mfg. Co., Kansas City, Kan.—Barrel Machinery.
Streeter, Alvin, Mfg. Co., Hingham, Mass.—Boring Machines, etc.
Struthers-Wells Co., Warren, Pa.—Saw Mills.
Stubbs, S. K., 30 Kemble St., Boston, Mass.—Machine Knives, etc.
Sturtevant, B. F., Co., Jamaica Plain, Mass.—Refuse Conveyors.
Superior Iron Works, West Superior, Wis.—Chair Machinery.
Swan, Jas., Co., Seymour, Conn.—Boring Machines.
Tacoma Brass & Machine Works, Tacoma, Wash.—Shingle Machines.
Tanite Co., Stroudsburg, Pa.—Planer Grinders.
Taylor Bros. & Co., Fulton, N. Y.—Machine Knives.
Taylor, Stiles & Co., Riegelsville, N. J.—Knives, Saws, etc.
Thomson, Wm. S., 418 W. 27th St., New York.—Moulding Cutters.
Tidey, Charles H., Newark, N. J.—Saw Sets.
Tidey, M. B., 86 Warren St., Newark, N. J.—Saw Tables, Benches, Gages, etc. *See adv. page 84.*
Toledo Saw Works, Monroe & Water Sts., Toledo, O.—Knives, Saws.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.—Planers, Shapers, Saws, etc. *See adv. page 85.*
Trevor Mfg. Co., Lockport, N. Y.—Boring Machines, Lathes, etc.
Trumbull Mfg. Co., Warren, O.—Saw Mills.
Trump Bros. Machine Co., Wilmington, Del.—Scroll Saws.
Union Embossing Machine Co., Indianapolis, Ind.—Embossing Machines.
Union Iron Works, Minneapolis, Minn.—Saw Mill Machinery.
Union Iron Works, Selma, Ala.—Live Rolls.
Union Malleable Iron Co., East Moline, Ill.—Edgers.
Union Mfg. Co., New Britain, Conn.—Spoke Shavers.
United States Wind Engine & Pump Co., Batavia, Ill.—Saw Mills.
Valley City Machine Works, Grand Rapids, Mich.—Carving Machines.
Vaughn Machine Co., Woburn, Mass.—Machine Knives.
Walker, D. F., 57 Laurel St., Philadelphia, Pa.—Lathes.
Washburn Shops, Worcester, Mass.—Mitering Machines.
Washington Pulley Co., Ballard, Wash.—Saw Gages.
Watertown Steam Engine Co., Watertown, N. Y.—Saw Mills.
Waymoth, A. D., & Co., Fitchburg, Mass.—Lathes.
Westinghouse Co., Schenectady, N. Y.—Saw Mills.
West Point Iron Works, West Point, Ga.—Saw Mills.
West Side Iron Works, Grand Rapids, Mich.—Boring Machines, etc.
Weston, C. H., La Crosse, Wis.—Saw Gummers.
Wetmore Glue Tank Co., Toledo, O.—Glue Heaters.
Wheland's Machine Works, Chattanooga, Tenn.—Saw Mill Machinery.

White, John A., Co., Dover, N. H.—Knife Grinders, Planers, etc.
White, L. & I. J., Co., 143 Perry St., Buffalo, N. Y.—Saws, Knives, etc.
White-Blakeslee Mfg. Co., Birmingham, Ala.—Veneer Machines.
Whitman Agricultural Co., St. Louis, Mo.—Saw Machines.
Whitney, Baxter D., & Son, Winchendon, Mass.—Barrel, Pail and Tub Machinery.
Whitney Iron Works, New Orleans, La.—Saw Mills.
Wickes Bros., Saginaw, Mich.—Barrel and Saw Mill Machinery.
Willamette Iron & Steel Works, Portland, Ore.—Edgers, etc.
Williamsport Clutch & Pulley Co., Williamsport, Pa.—Veneer Machines.
Willott, Joseph, & Sons, Manitowoc, Wis.—Machine Knives.
Winkley Co., Hartford, Conn.—Rod, Pin and Dowel Machines.
Woburn Machine Co., Woburn, Mass.—Machine Knives.
Woods, S. A., Machine Co., South Boston, Mass.—Boring, Knife Grinding Machines, Lathes, etc. *See adv. page 92.*
Worden Tool Co., Cleveland, O.—Knives, Saws, etc.
Wright, Chas. E., Co., New Orange, N. J.—Saw Mills.
Wright, L., Machine Works, Newark, N. J.—Saw Machines.
Wyland Mfg. Co., Williamsport, Pa.—Box Shook Fasteners.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.—Band Saws and Wood Working Machinery. *See adv. page 99.*

WOODWORKING MACHINERY.

BARREL MACHINERY.

BOLT EQUALIZERS. For sawing bolts to required lengths.

American Seeding Machine Co., Springfield, Ohio.
Chattanooga Machinery Co., Chattanooga, Tenn.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Strait, H. N. Mfg. Co., Kansas City, Kans.
Trevor Mfg. Co., Lockport, N. Y.
Whitney, Baxter D., & Son, Winchendon, Mass.
Wickes Bros., Saginaw, Mich.

BORERS, BUNG. For boring bung holes in barrels.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.

CROZERS. For cutting the chime or croze in barrel ends.

Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Cincinnati Tool Co., Cincinnati, Ohio.
Clough & Witt Machine Co., Cleveland, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.
Wickes Bros., Saginaw, Mich.

DRIVERS, THIN HOOP. For driving iron hoops on barrels.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.

HEADING CUTTERS. For cutting barrel and keg heads.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
See adv. page 83.
Stamm Machine Works, Aurora, Ind.

HEADING JOINTERS. For trimming edges of short boards.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Oram, John S., Cleveland, O.
Trevor Mfg. Co., Lockport, N. Y.

HEADING PACKERS. For packing barrel heads, covers and bottoms.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.

HEADING PLANERS. For smoothing barrel heads.

Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.

HEADING PLANERS, continued

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
See adv. page 83.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Oram, John S., Cleveland, O.
Trevor Mfg. Co., Lockport, N. Y.

10 **HEADING ROUNDERS.** For rounding keg and barrel heads.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.

11 **HEADING SAWS.** For sawing barrel heads from blocks.

Gerlach, Peter, Co., Cleveland, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
See adv. page 83.
Lane Mfg. Co., Montpelier, Vt.
Oram, John S., Cleveland, O.
Stamm Machine Works, Aurora, Ind.
Trevor Mfg. Co., Lockport, N. Y.

12 **HEADING TURNERS.** For circling barrel heads, etc.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Mitts & Merrill, Saginaw, Mich.
Nichols, W. E., Machine Works, Winchendon, Mass.
Trevor Mfg. Co., Lockport, N. Y.

13 **HEADING-UP MACHINES AND DEVICES.** For putting heads in barrels and driving head hoops.

Garland, M., Co., Bay City, Mich.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
See adv. page 83.
Lane Mfg. Co., Montpelier, Vt.
Oram, John S., Cleveland, O.
Perkins & Co., Grand Rapids, Mich.
Simmons & Wellford, Memphis, Tenn.
Strait, H. N. Mfg. Co., Kansas City, Kans.

14 **HEATERS, BARREL.** For heating or firing barrels.

Chambers Patent Barrel Heater Co., St. Louis, Mo.
Clough & Witt Machine Co., Cleveland, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Pekin Gas Heating Co., Pekin, Ill.

15 **HOOP BENDERS.** For bending wood hoops.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Strait, H. N. Mfg. Co., Kansas City, Kans.

16 **HOOP COILERS.** For coiling the hoops after cutting.

Defiance Machine Works, Defiance, Ohio.
Merritt Mfg. Co., Lockport, N. Y.
Michels, J., & Co., Detroit, Mich.

17 **HOOP CUTTERS.** For cutting hoops from planks.

Defiance Machine Works, Defiance, Ohio.

HOOP CUTTERS, continued

Michels, J., & Co., Detroit, Mich.

18 **HOOP FLARING MACHINES.** For forming iron hoops to fit barrels.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Johnson, T., 206 N. Carpenter St., Chicago, Ill.
Strait, H. N. Mfg. Co., Kansas City, Kans.

19 **HOOP NAILERS.** For nailing the hoops to exact sizes for slack barrels.

Clough & Witt Machine Co., Cleveland, O.
Farquhar, A. B., Co., Ltd., York, Pa.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.

20 **HOOP PLANING MACHINES.** For planing hoops.

Defiance Machine Works, Defiance, Ohio.
Merritt Mfg. Co., Lockport, N. Y.
Michels, J., & Co., Detroit, Mich.

21 **HOOP POINTERS AND LAPPERS.** For equalizing the length, pointing and lapping the hoops.

Defiance Machine Works, Defiance, Ohio.
Merritt Mfg. Co., Lockport, N. Y.
Michels, J., & Co., Detroit, Mich.

22 **HOOP PUNCHING MACHINES.** For punching rivet holes in iron hoops.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.

23 **HOOP PUNCHING, CUTTING AND FLARING MACHINES.** For punching, cutting and flaring at the same time.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
See adv. page 83.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.

24 **HOOP RIVETING MACHINES.** For riveting iron hoops.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.

25 **LEVELING MACHINES, BARREL.** For bringing barrels or casks into perpendicular position.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Stamm Machine Works, Aurora, Ind.

26 **LOCK CUTTERS.** For cutting notches or locks in wood hoops.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Strait, H. N. Mfg. Co., Kansas City, Kans.

27 **REJOINTERS.** For making joints.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Stamm Machine Works, Aurora, Ind.

28 **SETTING-UP FORMS.** For setting up packages or staves into cask form.

Clough & Witt Machine Co., Cleveland, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N., Mfg. Co., Kansas City, Kans.
Wickes Bros., Saginaw, Mich.

29 **STAVE BUCKERS.** For dressing staves.

Benson, A. M., 102 Canal St., Cleveland, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
See adv. page 83.
Oram, John S., Cleveland, O.

30 **STAVE CUTTERS.** For cutting staves.

Trevor Mfg. Co., Lockport, N. Y.

31 **STAVE DRESSERS.** See 29, Stave Buckers.

32 **STAVE EQUALIZERS.** For sawing staves to uniform lengths.

Benson, A. M., 102 Canal St., Cleveland, Ohio.
Chattanooga Machinery Co., Chattanooga, Tenn.
De Loach Mill Mfg. Co., Atlanta, Ga.
Garland, M., Co., Bay City, Mich.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.
Trevor Mfg. Co., Lockport, N. Y.
Wickes Bros., Saginaw, Mich.

33 **STAVE JOINTERS.** For dressing edges of staves.

Benson, A. M., 102 Canal St., Cleveland, Ohio.
Chattanooga Machinery Co., Chattanooga, Tenn.
Duplex Roller Bushing Co., Belfast, Me.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Garland, M., Co., Bay City, Mich.
Greaves Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.
Trevor Mfg. Co., Lockport, N. Y.
Whitney, Baxter D., & Son, Winchendon, Mass.
Wickes Bros., Saginaw, Mich.

34 **STAVE PACKERS.** For packing staves for shipment.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Trevor Mfg. Co., Lockport, N. Y.

35 **STAVE PLANERS.** For planing staves.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Oram, John S., Cleveland, O.
Strait, H. N. Mfg. Co., Kansas City, Kans.
Whitney, Baxter D., & Son, Winchendon, Mass.

36 **STAVE SAWS.** For sawing tub, pail, and barrel staves.

DeLoach Mill Mfg. Co., Atlanta, Ga.
Garland, M., Co., Bay City, Mich.
Gerlach, Peter Co., Cleveland, O.

STAVE SAWS, continued

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Whitney, Baxter D., & Son, Winchendon, Mass.

37 **STEAMERS.** For steaming barrels in order to bend the staves.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Strait, H. N. Mfg. Co., Kansas City, Kans.

38 **TRUSSING MACHINES.** See 13, Heading-up Machines.

39 **WINDLASSES.** For drawing opposite ends of staves together after one end is set up in frame.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y. *See adv. page 83.*
Oram, John S., Cleveland, O.
Strait, H. N., Mfg. Co., Kansas City, Kans.
Wickes Bros., Saginaw, Mich.

---

40 BOX AND CRATE MACHINERY.

41 **BAND RE-SAWS.** See 393, Re-Saws, Band.

42 **BELT SANDERS.** See 407, Sanding Machines, Belt.

43 **BOTTLE CASE MACHINES.** For trimming, grooving, fluting and rabeting boards for bottle cases and boxes divided into compartments.

Fay, J. A., & Egan Co., 329-349 West Front St., Cincinnati, O.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Morgan Machine Co., Rochester, N. Y.
Tidey, M. B., 86 Warren St., Newark, N. J.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

44 **CIGAR BOX MACHINERY.** Machines used for the making of cigar boxes.

American Wood Working Machinery Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, Ohio.
Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Grammes, L. F., & Sons, Allentown, Pa.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
International Box-Hinging Machine Co., 40 New St., New York.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94-95.*
Mershon, W. B., & Co., Saginaw, Mich.
Moeller, Herman, 187 West 20th St., Chicago, Ill.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 W. 41st St., New York.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*

CIGAR BOX MACHINERY, continued

Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

45 **CLEATING MACHINES.** For nailing cleated articles.

Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.
Luther, B. G., & Co., Worcester, Mass.

46 **DRESSING MACHINES.** For planing boxes.

Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

47 **FASTENERS, BOX.**

Carey Mfg. Co., 19 Roosevelt St., New York.

48 **FASTENERS, BOX SHOOK.** For fastening together pieced ends.

Wyland Mfg. Co., Williamsport, Pa.

49 **FRAMING MACHINES, SHOE BOX.** For framing shoe boxes.

Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.
Holmes, L. A., New Haven, Conn.

50 **GROOVING MACHINES.** For cutting grooves in box lumber.

American Wood Working Mchy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Chase Turbine Mfg. Co., Orange, Mass.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Garden City Fan Co., 42 So. Clinton St., Chicago, Ill.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Huther Bros., Rochester, N. Y. *See adv. page 81.*
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94-95.*
Morgan Machine Co., Rochester, N. Y.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

51 **HINGING MACHINES, BOX.** For hinging boxes.

Grammes, L. F., & Sons, Allentown, Pa.
International Box-Hinging Machine Co., 40 New St., New York.

52 **JOINTERS, BOX BOARD.** For planing the edges of box boards or shooks.

Adams, S., & Son, Rome, N. Y.
American Wood Working Mchy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St. Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.

JOINTERS, BOX BOARD, continued

Hobbs Mfg. Co., Worcester, Mass.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

53 **LINING MACHINES.** For nailing linings into boxes.

Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.

54 **LOCK CORNER BOX MACHINES.** For making lock corner joints for boxes or drawers.

Bentel & Margedant Co., Hamilton, O.
Chase Turbine Mfg. Co., Orange, Mass.
Connell & Dengler Machine Co., Rochester, N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Hobbs Mfg. Co., Worcester, Mass.
Morgan Machine Co., Rochester, N. Y.
Tidey, M. B., 86 Warren St., Newark, N. J.
Woods, S. A., Machine Co., South Boston, Mass.

55 **MATCHERS, BOX BOARD.** For planing tongues and grooves in boards.

American Wood Working Mchy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Chase Turbine Mfg. Co., Orange, Mass.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
DeLoach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
See adv. page 83.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94-95.*
Morgan Machine Co., Rochester, N. Y.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Ross, Josiah, Buffalo, N. Y.
Shimer, Sam'l J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

56 **NAILING MACHINES.** For nailing wood boxes.

Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.
Grammes, L. F., & Sons, Allentown, Pa.
Morgan Machine Co., Rochester, N. Y.

57 **PRINTERS, BOX BOARD.** For printing box sides or ends.

Connell & Dengler Machine Co., Rochester, N. Y.
Grammes, L. F., & Sons, Allentown, Pa.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

58 **SAW MACHINES, BOX BOARD CUT OFF.** For cutting off boards for boxes.

American Wood Working Mchy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes Tool Co., New Haven, Conn.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, Ohio.
DeLoach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Garland, M., Co., Bay City, Mich.
Grammes, L. F. & Sons, Allentown, Pa.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Luther, B. G., & Co., Worcester, Mass.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 W. 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wickes Bros., Saginaw, Mich.
Witherby, Rugg & Richardson, Worcester, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

59 **SAW MACHINES, EDGING.** See 428, under Saw Machines.

60 **SETTING-UP MACHINES.** For setting up boxes and wedging the sides and ends.

Dovetail Box-Machine Co., St. Paul, Minn.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Woods, S. A., Machine Co., South Boston, Mass.

60A **STOCK SIZING MACHINES.** For squaring and sizing to a dimension width the rough edges of stock used in making boxes.

Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Grammes, L. F., & Sons, Allentown, Pa.

61 **SLAT CUTTING MACHINES.** For cutting slats for boxes and crates.

Beach, H. W., Montrose, Pa.

SLAT CUTTING MACHINES, continued

Bentel & Margedant Co., Hamilton, O.
Butterworth & Lowe, Grand Rapids, Mich.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Lyon Iron Works, Greene, N. Y.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Trevor Mfg. Co., Lockport, N. Y.

62 **STRAPPING MACHINES.** For stretching the hoop iron when strapping boxes.

Doig, Wm. S., 56 Franklin St., Brooklyn, N. Y.

63 **SURFACERS.** See 379, Planers.

64 **THUMB OR HAND HOLE MACHINES, AUTOMATIC.** For cutting thumb or hand holes in boxes.
Chase Turbine Mfg. Co., Orange, Mass.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Tidey, M. B., 86 Warren St., Newark, N. J.

65 **TRIMMING MACHINES.** For trimming bottom edges of boxes, etc., and for trimming stock.

Dovetail Box-Machine Co., St. Paul, Minn.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Fox Machine Co., Grand Rapids, Mich.
Garland, M., Co., Bay City, Mich.
Grammes, L. F., & Sons, Allentown, Pa.
Oliver Machinery Co., Grand Rapids, Mich.
Perkins & Co., Grand Rapids, Mich.
Shiep, Henry H., Mfg. Co., 529 Columbia Ave., Philadelphia, Pa.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

---

66 ## CHAIR MACHINERY.

67 **ADZING AND SADDLE SEAT SHAPING MACHINES.** For shaping chair seats, and for adzing them.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Edge, Frank, & Co., Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Gardner Machine Works, Gardner, Mass. *See adv. page 100.*
Goodspeed Machine Co., Winchendon, Mass.
McKnight, L. G. & Co., Gardner, Mass.

ADZING AND SEAT SHAPING MACHINES, continued

Nichols, W. E., Machine Works, Winchendon, Mass.
Whitney, Baxter D., & Son, Winchendon, Mass.

68 **BACK BEADING MACHINES.**

McKnight, L. G. & Co., Gardner, Mass.

69 **BACK BENDERS.** For bending chair backs.

American Wood Working Machy Co., 136 Liberty St., N. Y.
Bancroft, Frank H., 210 N. Main St., Gardner, Mass.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Superior Iron Works, West Superior, Wis.

70 **BACK CUTTERS.** For cutting chair backs.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
McKnight, L. G. & Co., Gardner, Mass.

71 **BACK GAINERS.** For cutting the gains in chair seats to receive the uprights.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
McKnight, L. G. & Co., Gardner, Mass.

72 **BACK PLANERS.** For planing chair backs.

Chase Turbine Mfg. Co., Orange, Mass.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
McKnight, L. G. & Co., Gardner, Mass.

73 **BACK ROUNDERS.** For rounding chair backs.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
McKnight, L. G. & Co., Gardner, Mass.

74 **BACK SAWS.** For sawing chair backs.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Goodspeed Machine Co., Winchendon, Mass.

75 **BACK TENONING MACHINES.** For tenoning chair backs.

Chase Turbine Mfg. Co., Orange, Mass.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
McKnight, L. G. & Co., Gardner, Mass.

76 **BENDING MACHINES.** For bending wood into various forms. See 67, Shaping Machines.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.

77 **BORING MACHINES, CHAIR.** For boring chair legs, seats, arms, etc.

American Wood Working Machy. Co., 136 Liberty St., N. Y.

BORING MACHINES, CHAIR, continued

Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Goodspeed Machine Co., Winchendon, Mass.
McKnight, L. G. & Co., Gardner, Mass.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.
Pryibil, P., 512 West 41st St., New York. *See adv. page 88.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

78 **CUTTING OFF MACHINES.** For cutting off chair legs, etc.

Beach, H. W., Montrose, Pa.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
McKnight, L. G., & Co., Gardner, Mass.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.
Perkins & Co., Grand Rapids, Mich.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Woods, S. A., Machine Co., South Boston, Mass.

79 **DOWEL MACHINES.** See 405, Rod, Pin and Dowel Machines.

80 **EMBOSSING MACHINES.** For embossing wood backs and seats of chairs.

Denning, John P., Terre Haute, Ind.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
McKnight, L. G., & Co., Gardner, Mass.
Union Embossing Machine Co., Indianapolis, Ind.

81 **FRAME MACHINES.** For sawing, boring and fitting stock for chair seats, etc.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
McKnight, L. G., & Co., Gardner, Mass.

82 **GROOVING MACHINES, CHAIR.** For making grooves in chair backs, etc.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Goodspeed Machine Co., Winchendon, Mass. *See adv. page 98.*
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Smith, H. B., Machine Co., Smithville, N. J.

83 **MORTISING MACHINES, CHAIR BIT.** For mortising chair bits.

American Wood Working Machy Co., 136 Liberty St., N. Y.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St, Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Nichols, W. E., Machine Works, Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass.

84 **PRESSES.** For pressing chair backs, seat frames, etc.

Gardner Machine Works, Gardner, Mass. *See adv. page 100.*
McKnight, L. G., & Co., Gardner, Mass.
Superior Iron Works, West Superior, Wis.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

85 **ROUNDERS.** For rounding Grecian posts, rocker arms, rockers, etc.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
McKnight, L. G., & Co., Gardner, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

86 **SANDERS.** For sanding or polishing round work, chair legs, spindles, posts, handles, etc.

Bentel & Margedant Co., Hamilton, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Driver, C. H., 1404 16th St., Racine, Wis.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Gardner Machine Works, Gardner, Mass.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.
Porter, C. O. & A. D., Grand Rapids, Mich.
Pryibil, P., 512 West 41st St., New York. *See adv. page 88.*
Shawver Co., Springfield, O.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O. *See adv. page 85.*

87 **SEAT NOTCHING MACHINES.** For cutting both notches in seats at one operation.

McKnight, L. G., & Co., Gardner, Mass.

88 **SEAT SHAPING MACHINES.** See 67, Adzing and Saddle Seat Shaping Machines.

89 **TENONING MACHINES, ROCKER.** For making flat tenons and tenoning ends of posts for rocking chairs.

McKnight, L. G., & Co., Gardner, Mass.

---

90 PAIL AND TUB MACHINERY.

91 **BAIL BENDERS.** For bending the bails of pails and making the eyes.

Whitney, Baxter D., & Son, Winchendon, Mass.

92 **BOLTING UP MACHINES.** For sawing logs into bolts.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Goodspeed Machine Co., Winchendon, Mass.

93 **CYLINDER MACHINES.** See 36, Stave Saws.

Goodspeed Machine Co., Winchendon, Mass.

94 **HANDLE BORERS, SNAG.** For cutting the slots in the ends of staves to form the snag handle.

Whitney, Baxter D., & Son, Winchendon, Mass.

95 **HANDLE TURNERS.** For turning the handles for pails.

Defiance Machine Works, Defiance, Ohio.
Goodspeed Machine Co., Winchendon, Mass.
Whitney, Baxter D., & Son, Winchendon, Mass.

96 **HEADING TURNERS, AUTOMATIC.** For turning the heads of tubs.

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Nichols, W. E., Machine Works, Winchendon, Mass.

97 **HOOP DRIVERS.** For driving hoops on pails, tubs and packages.

Goodspeed Machine Co., Winchendon, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Whitney, Baxter D., & Son, Winchendon, Mass.

98 **HOOP PUNCHES.** For cutting hoop iron to desired lengths.

Goodspeed Machine Co., Winchendon, Mass.
Whitney, Baxter D., & Son, Winchendon, Mass.

99 **HOOP ROLLS...**For flaring the hoop iron for tubs, pails, etc.

Goodspeed Machine Co., Winchendon, Mass.
Whitney, Baxter D., & Son, Winchendon, Mass.

100 **LATHES, PAIL OR TUB.** For turning pails, tubs, kegs, etc.

Goodspeed Machine Co., Winchendon, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Whitney, Baxter D., & Son, Winchendon, Mass.

101 **MATCHERS, ROTARY.** For matching tub, churn and pail staves.

Goodspeed Machine Co., Winchendon, Mass.
Smith, H. B., Machine Co., Smithville, N. J.

102 **SANDING MACHINES.** See 408, Sand Papering Machines.

103 **SAW BENCHES, PIECING.** For edging pieces to be glued together for heads, bottoms, etc.

Goodspeed Machine Co., Winchendon, Mass.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.

104 SAWS, KNIVES, SAW TOOLS, ETC.

105 **BAND SAW BRAZING FRAMES.** For holding band saw blades while being brazed.

Allis-Chalmers Co., New York Life Bldg., Chicago.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Atkins, E. C., & Co., Indianapolis, Ind.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, Ohio.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Pryibil, P., 512 West 41st St., New York.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Rogers, S. C., & Co., Buffalo, N. Y.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wickes Bros., Saginaw, Mich.
Wright, Chas. E., Co., New Orange, N. J.

106 **Band Saw Carriage Offsets.** For automatically moving the carriage away from the saw.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Prescott, D. Clint, Menominee, Wis.
Smith, H. B., Machine Co., Smithville, N. J.
Stearns Mfg. Co., Erie, Pa.
Wickes Bros., Saginaw, Mich.

107 **BAND SAW FILERS.** For filing and sharpening band saw blades.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, Ohio.
Detrick & Harvey Machine Co., Baltimore, Md.
Edge, Frank, & Co., Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hillstrom Machine Co., Michigan City, Ind.
Pryibil, P., 512 West 41st St., New York.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Rogers, S. C., & Co., Buffalo, N. Y.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O
Woods, S. A., Machine Co., South Boston, Mass.

108 BAND SAW SETTING AND FILING FRAMES. Combination machines for filing and setting band saw teeth.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N.Y.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Bentel & Margdant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, Ohio.
Detrick & Harvey Machine Co., Baltimore, Md.
Edge, Frank, & Co., Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Pryibil, P., 512 West 41st St., New York.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.
Wright, Chas. E., Co., New Orange, N. J.

109 BAND SAW TOOLS. For repairing band saws.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Edge, Frank, & Co., Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Mitts & Merrill, Saginaw, Mich.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Wickes Bros., Saginaw, Mich.

110 BAND SAW WHEEL GRINDERS. For grinding band saws.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Mershon, W. B., & Co., Saginaw, Mich.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.

111 BRAZING CLAMPS. Appliances to hold the ends of the saw blades at the joint to be brazed.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N.Y.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.

BRAZING CLAMPS, continued.

Pryibil, P., 512 West 41st St., New York.
Rich, E. B., & Sons, 52 W. Washington St., Chicago, Ill.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wickes Bros., Saginaw, Mich.

112 **BRAZING TABLES.** For brazing saw blades.

Atkins, E. C., & Co., Indianapolis, Ind.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Edge, Frank. & Co., Grand Rapids, Mich.
Rich, E. B., & Sons, 52 W. Washington St., Chicago, Ill.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Wickes Bros., Saginaw, Mich.

113 **BRAZING TONGS.** For heating saw blades when brazing.
Made by all band saw makers.

114 **CUTTER HEAD GRINDERS.** For grinding the knives of cutter heads.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Shimer, Sam'l J., & Sons, Milton, Pa.

115 **KNIVES.**

116 **Machine.** The cutting tools used in machines.

Anderson Knife & Bar Co., Anderson, Ind.
Bailey & Blendinger, Woburn, Mass.
Bentel & Margedant Co., Hamilton, O.
Branch Saw Co., 817 No. 2d St., St. Louis, Mo.
Cleveland Machine Knife Co., Cleveland, O.
Coes, Loring, & Co., Inc., Worcester, Mass. *See adv. page 82.*
Curtis & Co. Mfg. Co., St. Louis, Mo.
Detroit Edge Tool Works, Detroit, Mich.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Dowd, R. J., Knife Works, Beloit, Wis.
Dowd's, John, Sons, East Lee, Mass.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Flagg, J., & Son, Dover, N. H.
Fox Machine Co., Grand Rapids, Mich.
Gregg, M., & Son, Rochester, N. Y.
Hankey, A., & Co., Rochdale, Mass. *See adv. page 100.*
Hardisty & Co., Cincinnati, O.
Hardy, L., & Co., Worcester. Mass.
Hiles, C. A., & Co., 14th St. & Western Ave., Chicago, Ill.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Holyoke Bar Co.. Holyoke, Mass.
Horne, J. H., & Sons Co.. Lawrence. Mass.
Lancaster Machine & Knife Works, Lancaster, N. Y.
Lanterman & Hague, Chicago, Ill.
Lovejoy, D., & Son, Lowell, Mass.
Loyd, John, Co., 562 Water St., New York.
Mack & Co., Rochester, N. Y.
Ohio Knife Co., Cincinnati. Ohio.

KNIVES, continued.

Ohio Tool Co., Columbus, Ohio.
Pacific Saw Mfg. Co., San Francisco, Cal.
Simonds, A. A., & Son, Dayton, O.
Simonds Mfg. Co., Fitchburg, Mass. *See adv. page 82.*
Smith, H. B., Machine Co., Smithville, N. J.
Snell & Atherton, Brockton, Mass.
Stubbs, S. K., 30 Kemble St., Boston, Mass.
Taylor Bros. & Co., Fulton, N. Y.
Taylor, Stiles & Co., Riegelsville, N. J.
Toledo Saw Works, Monroe & Water Sts., Toledo, Ohio.
Vaughn Machine Co., Woburn, Mass.
White, L. & I. J., Co., 143 Perry St., Buffalo, N. Y.
Willott, Joseph, & Sons, Manitowoc, Wis.
Woburn Machine Co., Woburn, Mass.
Worden Tool Co., Cleveland, O.

117 **Matcher.** See 116, Machine Knives.

118 **Panel Raising.** See 116, Machine Knives.

119 **Planer.** See 116, Machine Knives.

120 **Shingle.** Used on shingle machines.

Cleveland Machine Knife Co., Cleveland, O.
Coes, Loring, & Co., Inc., Worcester, Mass. *See adv. page 82.*
Hankey, A., & Co., Rochdale, Mass.
Hardisty & Co., Cincinnati, O.
Hiles, C. A., & Co., 14th St. & Western Ave., Chicago, Ill.
Simonds, A. A., & Son, Dayton, O.
Simonds Mfg. Co., Fitchburg, Mass
Smith, H. B., Machine Co., Smithville, N. J.
Stamm Machine Works, Aurora, Ind.
Taylor, Stiles & Co., Riegelsville, N. J.
Trevor Mfg. Co., Lockport, N. Y.
White, L. & I. J., Co., 143 Perry St., Buffalo, N. Y.
Worden Tool Co., Cleveland, O.

121 **Spoke Lathe.** See 116, Machine Knives.

122 **Tenoning.** Used in Tenoning Machines.

Atkins, E. C., & Co., Indianapolis, Ind.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Bentel & Margedant Co., Hamilton, O.
Branch Saw Co., 817 No. 2d St., St. Louis, Mo.
Coes, Loring, & Co., Inc., Worcester, Mass. *See adv. page 82.*
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hankey, A., & Co., Rochdale, Mass.
Hardisty & Co., Cincinnati, O.
Hiles, C. A., & Co., 14th St. & Western Ave., Chicago, Ill.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Simonds, A. A., & Son, Dayton, O.
Simonds Mfg. Co., Fitchburg, Mass.
Smith, H. B., Machine Co., Smithville, N. J.
Stamm Machine Works, Aurora, Ind.
Taylor, Stiles & Co., Riegelsville, N. J.

KNIVES, TENONING, continued.

White, L. & I. J., Co., 143 Perry St., Buffalo, N. Y.
Worden Tool Co., Cleveland, O.

123 **Tongue and Grooving.** See 116, Machine Knives.

124 **Veneer.** Used on Veneer Cutting Machines.

Atkins, E. C., & Co., Indianapolis, Ind.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Branch Saw Co., 817 No. 2d St., St. Louis, Mo.
Cleveland Machine Knife Co., Cleveland, O.
Coes, Loring, & Co., Inc., Worcester, Mass. *See adv, page 82.*
Hankey, A., & Co., Rochdale, Mass.
Hardisty & Co., Cincinnati, O.
Hiles, C. A., & Co., 14th St. & Western Ave., Chicago, Ill.
Loyd, John, Co., 562 Water St., New York.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Simonds, A. A., & Son, Dayton, O.
Simonds Mfg. Co., Fitchburg, Mass. *See adv. page 82.*
Smith, H. B., Machine Co., Smithville, N. J.
Stubbs, S. K., 30 Kemble St., Boston, Mass.
Stamm Machine Works, Aurora, Ind.
Taylor, Stiles & Co., Riegelsville, N. J.
White, L. & I. J., Co., 143 Perry St., Buffalo, N. Y.
Worden Tool Co., Cleveland, O.

125 **LAP CUTTERS.** For preparing by the use of milling cutters, the laps or bevels on band saws preparatory to making brazes.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Chattanooga Machinery Co., Chattanooga, Tenn.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Mitts & Merrill, Saginaw, Mich.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Wickes Bros., Saginaw, Mich.

126 **LAP GRINDERS.** For preparing by the use of emery wheels, the laps or bevels on band saws preparatory to making brazes.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Mitts & Merrill, Saginaw, Mich.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Wickes Bros., Saginaw, Mich.

127 **RETOOTHERS.** For punching new teeth in band saws or for toothing blank saws.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.

128 **SAWS, VENEER.** Circular saws used in cutting veneer, usually made in segments.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atkins, E. C., & Co., Indianapolis, Ind.
Branch Saw Co., 817 No. 2d St., St. Louis, Mo.
Curtis & Co., Mfg. Co., St. Louis, Mo.

SAWS, VENEER, continued

Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hoe, R., & Co., 504 Grand St., New York.
National Saw Co., Newark, N. J.
Robinson & Co., Richmond, Ind.
Simonds Mfg. Co., Fitchburg, Mass.

129 **Mitre.** Made by all saw makers.

130 **SAW BLADES.**

131 **Band.** The endless band or blade used as the cutting tool on band saw machines.

Andrews & Son, Williamsport, Pa.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Bentel & Margedant Co., Hamilton, O.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Cocker, William, Lockport, N. Y.
Crescent Machine Co., Leetonia, Ohio.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Edge, Frank, & Co., Grand Rapids, Mich.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Fisher & Davis, St. Louis, Mo.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hastings & Co., 9 Railroad Place, Newark, N. J.
Hiles, C. A., & Co., 14th St., and Western Ave., Chicago, Ill.
Hodgkins, C. & A., Co., Marlboro, N. H.
Massachusetts Saw Works, Springfield, Mass.
National Saw Co., Newark, N. J.
Ohlen, Jas. & Sons, Saw Mfg. Co., Columbus, Ohio.
Oldham, Joshua, & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.
Oliver Machinery Co., Grand Rapids, Mich.
Pacific Saw Mfg. Co., San Francisco, Cal.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Simonds Mfg. Co., Fitchburg, Mass. *See adv. pages 82.*
Toledo Saw Co., Monroe & Water Sts., Toledo, O.

132 **Circular.** The blade or cutting tool used on a saw arbor or mandrel.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
Andrews & Son, Williamsport, Pa.
Appleton Mfg. Co., Batavia, Ill.
Atkins, E. C., & Co., Indianapolis, Ind.
Baldridge & Hogan Saw Co., 7 Vine St., Cincinnati, O.
Barcus Bros., Muskegon, Mich.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Broadhead, Joseph, Manistee, Mich.
California Saw Works, 208-212 Mission St., San Francisco.
Canton Saw Co., Canton, O.
Cocker, William, Lockport, N. Y.

SAW BLADES, CIRCULAR, continued.

Collins, F. F., Mfg. Co., San Antonio, Tex.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Decker, E. F., cor. Church & Bleecker Sts., Albany, N. Y.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Farwell, F. E., Fitchburg, Mass.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Milwaukee, Wis.
Fox, J. E., Saw Works, 900 1st Ave. S., Seattle, Wash.
Garland, M., Co., Bay City, Mich.
Gerlach, Peter, Co., Cleveland, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hastings & Co., 9 Railroad Place, Newark, N. J.
Hiles, C. A., & Co., 14th St. and Western Ave., Chicago, Ill.
Hoe, R., & Co., 504 Grand St., New York.
Howell, R. R., & Co., Minneapolis, Minn.
Huther Bros., Rochester, N. Y. *See adv. page 81.*
Kline, Lewis T., Alpena, Mich.
Liddell Co., Charlotte, N. C.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
McNiece, Wm., & Son, 515 Cherry St., Philadelphia, Pa.
Michigan Saw Co., Saginaw, Mich.
National Saw Co., Newark, N. J.
Ohlen, Jas. & Sons, Saw Mfg. Co., Columbus, O.
Oldham, Joshua, & Sons, Inc., 112-132 26th St, Brooklyn, N. Y.
Pacific Saw Mfg. Co., San Francisco, Cal.
Perkins & Co., Grand Rapids, Mich.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Ralya Saw Co., Middletown, Ind.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Simonds Mfg. Co., Fitchburg, Mass. *See adv. page 82.*
Sinker-Davis Co., Indianapolis, Ind.
Southern Saw Works, Atlanta, Ga.
Toledo Saw Co., Monroe & Water Sts., Toledo, O.

133 CONCAVE. For cutting circular pieces.

Atkins, E. C., & Co., Indianapolis, Ind.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Broadhead, Joseph, Manistee, Mich.
Decker, E. F., cor. Church & Bleecker Sts., Albany, N. Y.
Disston, Henry, & Sons, Inc., Philadelphia, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Hiles, C. A., & Co., 14th St., and Western Ave., Chicago, Ill.
Huther Bros., Rochester, N. Y. *See adv. page 81.*
Michigan Saw Co., Saginaw, Mich.
National Saw Co., Newark, N. J.
Ohlen, Jas. & Sons, Saw Mfg. Co., Columbus, O.
Oldham, Joshua, & Sons, Inc., 112-132 26th St, Brooklyn, N. Y.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Simonds Mfg. Co., Fitchburg, Mass.

134 INSERTED TOOTH. Having removable teeth.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.

SAW BLADES, INSERTED TOOTH, continued

Andrews & Son, Williamsport, Pa.
Atkins, E. C., & Co., Indianapolis, Ind.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Canton Saw Co., Canton, O.
Cocker, William, Lockport, N. Y.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Decker, E. F., cor Church & Bleecker Sts., Albany, N. Y.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Hoe, R., & Co., 504 Grand St., New York.
Ohlen, Jas. & Sons, Saw Mfg. Co., Columbus, O.
Oldham, Joshua, & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Simonds Mfg. Co., Fitchburg, Mass.
Southern Saw Works, Atlanta, Ga.

135 **Cut-off.** See 132, Circular Saw Blades.

136 **Drag.** The saw blade used on drag saw mills.

Atkins, E. C., & Co., Indianapolis, Ind.
Baldridge & Hogan Saw Co., 7 Vine St., Cincinnati, O.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Broadhead, Joseph, Manistee, Mich.
Chase Turbine Mfg. Co., Orange, Mass.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Decker, E. F., cor. Church & Bleecker Sts., Albany, N. Y.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Gray's, A. W., Sons, Middletown Springs, Vt.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hoe, R., & Co., 504 Grand St., New York.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Michigan Saw Co., Saginaw, Mich.
National Saw Co., Newark, N. J.
Oldham, Joshua & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.
Ohlen, Jas. & Sons, Saw Mfg. Co., Columbus, O.
Pacific Saw Mfg. Co., San Francisco, Cal.
Perkins & Co., Grand Rapids, Mich.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Robinson & Co., Richmond, Ind.
Simonds Mfg. Co., Fitchburg, Mass.

137 **Edger.** See 132, Circular Saw Blades.

138 **Gang.** The saw blades used on gang saw mills.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atkins, E. C., & Co., Indianapolis, Ind.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Broadhead, Joseph, Manistee, Mich.
Buckeye Saw Mfg. Co., Columbus, O.
Curtis & Co. Mfg. Co., St. Louis, Mo.
Decker, E. F., cor. Church & Bleecker Sts., Albany, N. Y.

SAW BLADES, GANG, continued

Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Michigan Saw Co., Saginaw, Mich.
Oldham, Joshua, & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Simonds Mfg. Co., Fitchburg, Mass.

139 **Mulay.** A guided, unstrained, upright saw.

Atkins, E. C., & Co., Indianapolis, Ind.
Baldridge & Hogan Saw Co., 7 Vine St., Cincinnati, O.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Broadhead, Joseph, Manistee, Mich.
Chandler & Taylor Co., Indianapolis, Ind.
Decker, E. F., cor. Church & Bleecker Sts., Albany, N. Y.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Hoe, R., & Co., 504 Grand St., New York.
National Saw Co., Newark, N. J.
Ohlen, Jas. & Sons, Saw Mfg. Co., Columbus, O.
Oldham, Joshua, & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.
Pacific Saw Mfg. Co., San Francisco, Cal.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Simonds Mfg. Co., Fitchburg, Mass.

140 **Re-Sawing.** See 132, Circular Saw Blades.

141 **Segment.** Circular saws built up of segments.

Andrews & Son, Williamsport, Pa.
Atkins, E. C., & Co., Indianapolis, Ind.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Cocker, William, Lockport, N. Y.
Decker, E. F., cor. Church & Bleecker Sts., Albany, N. Y.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
National Saw Co., Newark, N. J.
Oldham, Joshua, & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.

142 **Shingle.** The blades used in shingle mills.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
Atkins, E. C., & Co., Indianapolis, Ind.
Baldridge & Hogan Saw Co., 7 Vine St., Cincinnati, O.
Barcus Bros., Muskegon, Mich.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Broadhead, Joseph, Manistee, Mich.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Decker, E. F., cor Church & Bleecker Sts., Albany, N. Y.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fox, J. E., Saw Works, 900 1st Ave. S., Seattle, Wash.
Hiles, C. A., & Co., 14th St. and Western Ave., Chicago, Ill.

SAW BLADES, SHINGLE, continued.

Hoe, R., & Co., 504 Grand St., New York.
National Saw Co., Newark, N. J.
Ohlen, Jas., & Sons, Saw Mfg. Co., Columbus, O.
Oldham, Joshua, & Sons, Inc., 112-132 26th St., Brooklyn, N. Y.
Pacific Saw Mfg. Co., San Francisco, Cal.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Simonds Mfg. Co., Fitchburg, Mass.
Southern Saw Works, Atlanta, Ga.
Trevor Mfg. Co., Lockport, N. Y.
Toledo Saw Co., Monroe & Water Sts., Toledo, O.

143 **SAW FILING CLAMPS.** For holding the saws while filing the teeth.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atkins, E. C., & Co., Indianapolis, Ind.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Cincinnati Tool Co., Cincinnati, O.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Pryibil, P., 512 West 41st St., New York.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Simonds Mfg. Co., Fitchburg, Mass.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O
Wickes Bros., Saginaw, Mich.

144 **SAW FLANGERS.** For flanging saws.

Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Perkins & Co., Grand Rapids, Mich.

145 **SAW GAGES.** See 317 under Gages.

145A **SAW GRINDERS, SHINGLE.** For grinding shingle saws.

Perkins & Co., Grand Rapids, Mich.

146 **SAW GUARDS.**

Atkins, E. C., & Co., Indianapolis, Ind.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

147 **SAW GUMMERS.** For keeping saws in order.

Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.

SAW GUMMERS, continued.

Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Builders Iron Foundry, Providence, R. I.
California Saw Works, 208-212 Mission St., San Francisco, Cal.
Cleveland Stone Co., Cleveland, O.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Diamond Machine Co., Providence, R. I. *See adv. page 76.*
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Fox, J. E., Saw Works, 900 1st Ave. S., Seattle, Wash.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hoe, R., & Co., 504 Grand St., New York.
Howell, R. R., & Co., Minneapolis, Minn.
Lancaster Peerless Emery Wheel Co., Lancaster Pa.
Lovell Machine Works, Fitchburg, Mass.
Mixter, J. W., & Co., Plymouth, Mass.
Perkins & Co., Grand Rapids, Mich.
Rich, E. B., & Sons, 52 W. Washington St., Chicago, Ill.
Riverside Machine Works, Kokomo, Ind.
Robertson Mfg. Co., 1848 Niagara St., Buffalo, N. Y.
Robinson & Co., Richmond, Ind.
Silver Mfg. Co., Salem, O.
Simonds Mfg. Co., Fitchburg, Mass.
Tanite Co., Stroudsburg, Pa.
Weston, C. H., La Crosse, Wis.
Wickes Bros., Saginaw, Mich.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

148 **SAW GUMMERS' CUTTERS.** The cutters of saw gummers.
Atkins, E. C., & Co., Indianapolis, Ind.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fisher & Davis, St. Louis, Mo.
Mixter, J. W., & Co., Plymouth, Mass.
Robinson & Co., Richmond, Ind.
Simonds Mfg. Co., Fitchburg, Mass.

149 **SAW HAMMERS.** For hammering saws.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Mershon, W. B., & Co., Saginaw, Mich.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Simonds Mfg. Co., Fitchburg, Mass.
Wickes Bros., Saginaw, Mich.

150 **SAW SET GAGES.** For ascertaining the amount of set given to teeth.

Atkins, E. C., & Co., Indianapolis, Ind.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Simonds Mfg. Co., Fitchburg, Mass.

151 **SAW SETS.** For springing saw teeth by bending.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atkins, E. C., & Co., Indianapolis, Ind.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Colladay, Joseph O., 626 Race St., Philadelphia, Pa.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fox, J. E., Saw Works, 900 1st Ave. S., Seattle, Wash.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Kilborn & Bishop Co., New Haven, Conn.
National Saw Co., Newark, N. J.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Peck, Stow & Wilcox Co., Southington, Conn.
Pryibil, P., 512 West 41st St., New York.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Robinson & Co., Richmond, Ind.
Smith, Seymour & Son, Oakville, Conn.
Simonds Mfg. Co., Fitchburg, Mass.
Tidey, Charles H., Newark, N. J.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

152 **SAW SHARPENERS.** For sharpening saws.

Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Clark Bros., Belmont, N. Y.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Diamond Machine Co., Providence, R. I. *See adv. page 76.*
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Howell, R. R., & Co., Minneapolis, Minn.
Luther, B. G., & Co., Worcester, Mass.
Mershon, W. B., & Co., Saginaw, Mich.
Perkins & Co., Grand Rapids, Mich.
Pryibil, P., 512 West 41st St., New York.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Rogers, S. C., & Co., Buffalo, N. Y.
Simonds Mfg. Co., Fitchburg, Mass.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Wickes Bros., Saginaw, Mich.

153 **SAW STRETCHERS.** For tensioning band, gang or band resaws by rolls that press on plates uniformly instead of hammering.

Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.

SAW STRETCHERS, continued

Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.

154 **SAW SWAGES.** For spreading the points of saw teeth to allow clearance for the body of the saw.

Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Atkins, E. C., & Co., Indianapolis, Ind.
Baldridge & Hogan Saw Co., 7 Vine St., Cincinnati, O.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Branch Saw Co., 817 N. 2d St., St. Louis, Mo.
Crowell, D. J., 200 Terrace St., Buffalo, N. Y.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hanchett Swage Works, Big Rapids, Mich.
Hoe, R., & Co., 504 Grand St., New York.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Mixter, J. W., Saw Tool Co., Plymouth, Mass.
Ohlen, Jas., & Sons, Saw Mfg. Co., Columbus, O.
Phoenix Mfg. Co., Eau Claire, Wis.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Riverside Machine Works, Kokomo, Ind.
Robinson & Co., Richmond, Ind.
Simonds Mfg. Co., Fitchburg, Mass. *See adv. page 82.*
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.

155 **SAW TOOLS.** Tools used to keep saws in order and repair.

Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Barry, W. S., Saw & Supply Co., Indianapolis, Ind.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.

156 **SCRAPER EDGE TURNERS AND BLADE GRINDERS.**

Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Whitney, Baxter D., & Son, Winchendon, Mass.

157 **SIDE FILES.** For dressing the sides of teeth after swaging to obtain exactly the same clearance.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.

SIDE FILES, continued

Fisher & Davis, St. Louis, Mo.
Mixter, J. W., & Co., Plymouth, Mass.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Simonds Mfg. Co., Fitchburg, Mass. *See adv. page 82.*

158 **SWAGE SHAPERS.** For forming and shaping band and gang saw teeth after they have been swaged and filed.

Atkins, E. C., & Co., Indianapolis, Ind.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.

159 **UPSETS.** See 154, Saw Swages.

160 **VISES.** For holding saws while being repaired.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Cincinnati Tool Co., Cincinnati, O.
Disston, Henry, & Sons, Inc., Front & Laurel Sts., Philda, Pa.
Emmert Mfg. Co., Waynesboro, Pa.
Mershon, W. B., & Co., Saginaw, Mich.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

161 **Band Saw Filing.** See 108, Band Saw Setting and Filing Frames.

162 **Patterns Makers'.** For holding work to be operated upon.

Barbour-Stockwell Co., Cambridgeport, Mass.
Emmert Mfg. Co., Waynesboro, Pa.
Furniture City Vise Co., Ltd., Grand Rapids, Mich.

---

163 SAW MILL MACHINERY.

164 **BUTTING MACHINES.** For finishing and dressing the ends of boards, planks, or small timber.

Lane Mfg. Co., Montpelier, Vt.
Wickes Bros., Saginaw, Mich.

165 **CENTER DECKS.** See 177, Log Decks.

166 **FUEL FEEDERS.** For feeding refuse and shavings from saw mills to steam boilers.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.

FUEL FEEDERS, continued

Link, E. M., Machinery Co., Erie, Pa.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Wickes Bros., Saginaw, Mich.

167 LATH BINDERS AND BUNDLERS. For bundling and binding laths into packages for shipping.

Butterworth & Lowe, Grand Rapids, Mich.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Phoenix Mfg. Co., Eau Claire, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie Pa.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.

168 LATH BINDERS AND TRIMMERS. For binding and trimming laths.

Butterworth & Lowe, Grand Rapids, Mich.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Mitts & Merrill, Saginaw, Mich.
Phoenix Mfg. Co., Eau Claire, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie Pa.
Wickes Bros., Saginaw, Mich.

169 LATH BOLTERS. For reducing material to desired thickness for ripping into laths.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Butterworth & Lowe, Grand Rapids, Mich.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Defiance Machine Works, Defiance, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.

LATH BOLTERS, continued

Kline, Lewis T., Alpena, Mich.
Lane Mfg. Co., Montpelier, Vt.
Mitts & Merrill, Saginaw, Mich.
Novelty Iron Works, Dubuque, Ia.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

170 LATH MACHINES. See 171, Lath Mills.

171 LATH MILLS. For sawing material into laths.

Adams, S., & Son, Rome, N. Y.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Steam Pump Co., Battle Creek, Mich.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Butterworth & Lowe, Grand Rapids, Mich.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Curtis & Co. Mfg. Co., St. Louis, Mo.
Defiance Machine Works, Defiance, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Elliott, George E., Calais, Me.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Garland, M., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Kline, Lewis T., Alpena, Mich.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Lansing Boiler & Engine Works, Lansing, Mich.
Lyon Iron Works, Greene, N. Y.
Mitts & Merrill, Saginaw, Mich.
Novelty Iron Works, Dubuque, Ia.
Phoenix Mfg. Co., Eau Claire, Wis.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O
See adv. page 85.
Union Iron Works, Minneapolis, Minn.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

172 **LATH MILLS AND BOLTERS, COMBINED.** For reducing material to desired thickness and sawing into laths in one operation.

Butterworth & Lowe, Grand Rapids, Mich.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Howell, R. R., & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Lyon Iron Works, Greene, N. Y.
Mitts & Merrill, Saginaw, Mich.
Phoenix Mfg. Co., Eau Claire, Wis.
Rodgers Iron Mfg. Co., Muskegon, Mich.
Standard Saw Mill Machinery Co., Erie, Pa.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.
See adv. page 99.

173 **LIVE ROLLS.** For conveying material in saw mills.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, W. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Link, E. M., Machinery Co., Erie, Pa.
Mecklenburg Iron Works, Charlotte, N. C.
Memphis Machine Works, Memphis, Tenn.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Union Iron Works, Selma, Ala.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.
Williamette Iron & Steel Works, Portland, Ore.

174 **LOG AND LUMBER TRUCKS.** See Finding List.

175 **LOG AND SLAB CONVEYORS.** For carrying logs or slabs.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Jeffrey Mfg. Co., Columbus, O.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Link, E. M., Machinery Co., Erie, Pa.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.
Stearns Mfg. Co., Erie, Pa.
Wickes Bros., Saginaw, Mich.

176 **LOG BAND SAW MILLS.** See 196, Saw Mills.

177 **LOG DECKS.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Garland, M., Co., Bay City, Mich.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Lane Mfg. Co., Montpelier, Vt.
Link, E. M., Machinery Co., Erie, Pa.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

178 **LOG HAULS.** For hauling logs.

Adams, W. T., Machine Co., Corinth, Miss.,
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Jeffrey Mfg. Co., Columbus, O.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Link, E. M., Machinery Co., Erie, Pa.
Mecklenburg Iron Works, Charlotte, N. C.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.

LOG HAULS, continued.

Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

179 **LOG JACKS.** Endless chain used for handling large and heavy logs.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Defiance Machine Works, Defiance, O.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Jeffrey Mfg. Co., Columbus, O.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Link, E. M., Machinery Co., Erie, Pa.
Novelty Iron Works, Dubuque, Ia.
Perkins & Co., Grand Rapids, Mich.
Phoenix Mfg. Co., Eau Claire, Wis.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.
Stearns Mfg. Co., Erie, Pa.
Wickes Bros., Saginaw, Mich.

180 **LOG MILLS.** For sawing logs into boards, planks, etc.

Chandler & Taylor Co. Indianapolis, Ind.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Garland, M., Co., Bay City, Mich.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Lane Mfg. Co., Montpelier, Vt.
Prescott, D. Clint, Co., Menominee, Wis.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Trevor Mfg. Co., Lockport, N. Y.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

181 **LOG ROLLERS.** For preventing logs from rolling forward to the circular carriage or band mill carriage.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.

LOG ROLLERS, continued.

Clark Bros., Belmont, N. Y.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.,
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co, Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Wickes Bros., Saginaw, Mich.

182 **LOG SETTING INDICATORS.** All manufacturers of head blocks make indicators. See 210, Saw Mill Head Blocks.

183 **LOG STOPS.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, W. E., & Co., Kalamazoo, Mich.
Lane Mfg. Co., Montpelier, Vt.
Perkins & Co., Grand Rapids, Mich.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

184 **LOG TURNERS.** For turning logs.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
Aultman & Taylor Machinery Co., Mansfield, O.
Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Diamond Iron Works, Minneapolis, Minn.
De Loach Mill Mfg. Co., Atlanta, Ga.
Edwards Mfg. Co., Laceyville, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Heilman Machine Works, Evansville, Ind.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Mecklenburg Iron Works, Charlotte, N. C.
Memphis Machine Works, Memphis, Tenn.
Prescott, D. Clint, Co., Menominee, Wis.
Reeves & Co., Columbus, Ind.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.

LOG TURNERS, continued.

Rockwood Mfg. Co., Indianapolis, Ind.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.
Standard Saw Mill Machinery Co., Erie, Pa.
Trumbull Mfg. Co., Warren, O.
Union Iron Works, Minneapolis, Minn.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.

185 **LUMBER BUGGIES.** Vehicles for carrying lumber.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fisher & Davis, St. Louis, Mo.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Novelty Iron Works, Dubuque, Ia.
Roesch, Fred., Little Rock, Ark.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.

186 **LUMBER EDGERS.** See 298, Gang Edgers.

187 **LUMBER MILL MACHINES.** For sawing lumber.

Adams, S., & Son, Rome, N. Y.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Berlin Machine Works, Beloit, Wis.
Clark Bros., Belmont, N. Y.
Cordesman Machine Co., Cincinnati, O.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt.
Link, E. M., Machinery Co., Erie, Pa.
McDonough Mfg. Co., Eau Claire, Wis.
Perkins & Co., Grand Rapids, Mich.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Robinson & Co., Richmond, Ind.
Sinker-Davis Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.

LUMBER MILL MACHINES, continued.

Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
See adv. page 85.
Union Iron Works, Minneapolis, Minn.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.

187A **LUMBER STACKERS.** For stacking lumber on trucks for drying.

Soule Steam Feed Works, Meridian, Miss.

188 **LUMBER TRIMMERS.** For trimming ends and cutting to uniform lengths.

Adams, W. T. Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Garland, M., Co., Bay City, Mich.
Gordon Hollow Blast Grate Co., Greenville, Mich.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Jeffrey Mfg. Co., Columbus, O.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Link, E. M., Machinery Co., Erie, Pa.
Memphis Machine Works, Memphis, Tenn.
Morgan Machine Co., Rochester, N. Y.
Novelty Iron Works, Dubuque, Ia.
Phoenix Mfg. Co., Eau Claire, Wis.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.

189 **MINING TIMBER FRAMING MACHINES.** For sawing and framing timbers for mines and tunnels.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Col.

190 **NIGGERS.** For lifting logs to saw mill carriages.

Clark Bros., Belmont, N. Y.
Diamond Iron Works, Minneapolis, Minn.

NIGGERS, continued

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

191 **REFUSE CONVEYORS.** For conveying refuse from wood working factories.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co. Chattanooga, Tenn.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Diamond Iron Works, Minneapolis, Minn.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Jackson & Church Co., Saginaw, Mich.
Jeffrey Mfg. Co., Columbus, O.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Muskegon Boiler Works, Muskegon, Mich.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn. *See adv. page 82.*
Sturtevant, B. F., Co., 34 Oliver St., Boston, Mass.
Wickes Bros., Saginaw, Mich.

192 **ROLLERS, CARRIAGE.** All manufacturers of Saw Mills make Carriage Rollers.

193 **SAW DUST CONVEYORS.** For conveying saw dust and refuse.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Bangor Foundry & Machine Co., Bangor, Me.
Chattanooga Machinery Co., Chattanooga, Tenn.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Jeffrey Mfg. Co., Columbus, O.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Porbeck Bros. Mfg. Co., St. Louis, Mo.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn. *See adv. page 82.*
Trumbull Mfg. Co., Warren, O.
Union Iron Works, Minneapolis, Minn.

SAW DUST CONVEYORS, continued.

Wickes Bros., Saginaw, Mich.

194 SAW GUIDES.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atkins, E. C., & Co., Indianapolis, Ind.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Bentel & Margedant Co., Hamilton, O.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Lovell Machine Works, Fitchburg, Mass.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Prescott, D. Clint, Co., Menominee, Wis.
Pryibil, P., 512 W. 41st St., New York.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
White, John A., Co., Dover, N. H.
Wickes Bros., Saginaw, Mich.
Wright, Chas. E., Co., New Orange, N. J.

195 SAWING MACHINES. See 422, Circular Saw Machines.

196 SAW MILLS.

197 Band. For sawing logs into boards or planks.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Chandler & Taylor Co., Indianapolis, Ind.
Clark Bros., Belmont, N. Y.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.

SAW MILLS, BAND, continued

Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Howell, R. R., & Co., Minneapolis, Minn.
Kline, Lewis T., Alpena, Mich.
Lane & Bodley Co., Cincinnati, O.
Memphis Machine Works, Memphis, Tenn.
Mershon, W. B., & Co., East Saginaw, Mich.
Phoenix Mfg. Co., Eau Claire, Wis.
Prescott, D. Clint, Co., Menominee, Wis.
Ross, Josiah, Buffalo, N. Y.
Sinker-Davis Co., Indianapolis, Ind.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Trevor, W. J., Mfg. Co., Lockport, N. Y.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

198 **Band and Circular.** Having a circular saw and a band saw, to be used alternately.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.

199 **Circular.** For reducing logs to boards and planks.

Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
American Steam Pump Co., Battle Creek, Mich.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Aultman & Taylor Machinery Co., Mansfield, O.
Barnes Mfg. Co., Lanesboro, Pa.
Bartley, Wm., & Sons, Bartley, N. J.
Best, John, (Estate of), Lancaster, Pa.
California Saw Works, 208-212 Mission St., San Francisco.
Chandler & Taylor Co., Indianapolis, Ind.
Chase Turbine Mfg. Co., Orange, Mass.
Clark Bros., Belmont, N. Y.
Comstock, Geo. S., Mechanicsburg, Pa.
Curtis & Co. Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Duplex Roller Bushing Co., Belfast, Me.
Edwards, M. L., Salem, Ohio.
Eureka Bark Mill Co., Lancaster, Pa.
Farquhar, A. B., Co., Ltd., York, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.

SAW MILLS, CIRCULAR, continued.

Fisher & Davis, St. Louis, Mo.
Frick Co., Waynesboro, Pa.
Gaar, Scott & Co., Richmond, Ind.
Garland, M., Co., Bay City, Mich.
Geiser Mfg. Co., Waynesboro, Pa.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Heilman Machine Works, Evansville, Ind.
Hench & Dromgold, York, Pa.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Herrick, Chas. R., Northampton, Mass.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Hoe, R., & Co., 504 Grand St., New York.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Lansing Boiler & Engine Works, Lansing, Mich.
Lombard Iron Works and Supply Co., Augusta, Ga.
Lyon Iron Works, Greene, N. Y.
McEwen Bros., Wellsville, N. Y.
Mecklenburg Iron Works, Charlotte, N. C.
New Birdsall Co., Auburn, N. Y.
Novelty Iron Works, Dubuque, Ia.
Phoenix Mfg. Co., Eau Claire, Wis.
Prescott, D. Clint, Co., Menominee, Wis.
Randle Machinery Co., 206 Water St., Cincinnati, O.
Reeves & Co., Columbus, Ind.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Rockwood Mfg. Co., Indianapolis, Ind.
Russell & Co., Massillon, O.
Salem Iron Works, Salem, N. C.
Sinker-Davis Co., Indianapolis, Ind.
Smalley Mfg. Co., Manitowoc, Wis.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Trevor Mfg. Co., Lockport, N. Y.
Trumbull Mfg. Co., Warren, O.
Union Iron Works, Minneapolis, Minn.
Watertown Steam Engine Co., Watertown, N. Y.
West Point Iron Works, West Point, Ga.
Wheland's Machine Works, Chattanooga, Tenn.
Whitney Iron Works Co., New Orleans, La.
Westinghouse Co., Schenectady, N. Y.
Wickes Bros., Saginaw, Mich.

200 CORD WOOD. See 206, Saw Mills, Cord Wood.

201 DIRECT RUNNING. See 207, Saw Mills, Direct Running.

202 **Drag.** For cutting off "felled lumber" or logs.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
Bangor Foundry & Machine Co., Bangor, Me.
Butterworth & Lowe, Grand Rapids, Mich.

SAW MILLS, DRAG, continued

Chandler & Taylor Co., Indianapolis, Ind.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Curtis & Co. Mfg. Co., St. Louis, Mo.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Empire Agricultural Works, Cobleskill, N. Y.
Farquhar, A. B., Co., York, Pa.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Folding Saw Machine Co., 16-18 So. Clinton St., Chicago, Ill.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Hinckley & Egery Iron Co., Bangor, Me.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Lyon Iron Works, Greene, N. Y.
Merrill Iron Works, Merrill, Wis.
Novelty Iron Works, Dubuque, Ia.
Perkins & Co., Grand Rapids, Mich.
Robinson & Co., Richmond, Ind.
Smalley Mfg. Co., Manitowoc, Wis.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
St. Albans Foundry Co., St. Albans, Vt.
Stearns Mfg. Co., Erie, Pa.
Trevor Mfg. Co., Lockport, N. Y.
Westinghouse Co., Schenectady, N. Y.
Wickes Bros., Saginaw, Mich.

203 **Gang.** Carrying a gang of vertical saw-blades operated in reciprocal motion, to reduce large timbers to boards or planks.

Adams, S., & Son, Rome, N. Y.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, H. B., Machine Co., Smithville, N. J.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

204 **Portable.** See 208, Saw Mills, Portable.

205 **SAW MILL CARRIAGES.** For conveying the logs to and from the saws.

Adams Bros. Co., Findlay, O.
Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.

SAW MILL CARRIAGES, continued

Atkins, E. C., & Co., Indianapolis, Ind.
Bartley, Wm., & Sons, Bartley, N. J.
Chandler & Taylor Co., Indianapolis, Ind.
Clark Bros., Belmont, N. Y.
Comstock, Geo. S., Mechanicsburg, Pa.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Farquhar, A. B., Co., Ltd., York, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Frick Co., Waynesboro, Pa.
Garland, M. Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Heilman Machine Works, Evansville, Ind.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Lovell Machine Works, Fitchburg, Mass.
Mecklenburg Iron Works, Charlotte, N. C.
Memphis Machine Works, Memphis, Tenn.
Prescott, D. Clint, Co., Menominee, Wis.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.

206 **SAW MILLS, CORD WOOD.** For sawing cord wood.

Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
Comstock, Geo. S., Mechanicsburg, Pa.
Defiance Machine Works, Defiance, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R. & Co., Minneapolis, Minn.
McLain, J. H., Co., Canton, O.
Robinson & Co., Richmond, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Stover Mfg. Co., Freeport, Ill.
Tidey, M. B., 86 Warren St., Newark, N. J.
Wickes Bros., Saginaw, Mich.

207 **Direct Running.** Having the circular saw mounted on the crank shaft.

Bartley, Wm. & Sons, Bartley, N. J.

SAW MILLS, DIRECT RUNNING, continued

Smith, H. B., Machine Co., Smithville, N. J.

208 **Portable.** That can be transported to the work.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
Aultman & Taylor Machinery Co., Mansfield, O.
Bartley, Wm., & Sons, Bartley, N. J.
Best, John, (Estate of), Lancaster, Pa.
Booth, O. N., & Co., Monroeton, Pa.
Chandler & Taylor Co., Indianapolis, Ind.
Chase Turbine Mfg. Co., Orange, Mass.
Comstock, Geo. S., Mechanicsburg, Pa.
Cooper, C. & J., Mt. Vernon, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Enterprise Mfg. Co., Columbiana, O.
Farquhar, A. B., Co., Ltd., York, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Frick Co., Waynesboro, Pa.
Gaar, Scott & Co., Richmond, Ind.
Geiser Mfg. Co., Waynesboro, Pa.
Heilman Machine Works, Evansville, Ind.
Hench & Dromgold, York, Pa.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Lansing Boiler & Engine Works, Lansing, Mich.
Lazelere Machinery Co., Williamsport, Pa.
Liddell Co., Charlotte, N. C.
Livermore Foundry & Machine Co., Memphis, Tenn.
Lombard Iron Works & Supply Co., Augusta, Ga.
Lovell Machine Works, Fitchburg, Mass.
McDonough Mfg. Co., Eau Claire, Wis.
Mankato Mfg. Co., Mankato, Minn.
Mecklenburg Iron Works, Charlotte, N. C.
New Birdsall Co., Auburn, N. Y.
Norton & Cole Machinery Co., Cincinnati, O.
Phoenix Mfg. Co., Eau Claire, Wis.
Port Huron Saw Co., Ltd., Port Huron, Mich.
Prescott, D. Clint, Co., Menominee, Wis.
Potts, C. & A., Co., Indianapolis, Ind.
Reeves & Co., Columbus, Ind.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Russell & Co., Massillon, O.
Sergent Mfg. Co., Greensboro, N. C.
Sinker-Davis Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Spangler Mfg. Co., York, Pa.
Stearns Mfg. Co., Erie, Pa.
Struthers-Wells Co., Warren, Pa.

SAW MILLS, PORTABLE, continued.

West Point Iron Works, West Point, Ga.
Westinghouse Co., Schenectady, N. Y.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.

209 **SAW MILL DOGS.** For fastening or clamping the logs securely while being sawed.

Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..
American Seeding Machine Co., Springfield, Ohio.
Atkins, E. C., & Co., Indianapolis, Ind.
Bangor Edge Tool Co., Bangor, Me.
Canton Saw Co., Canton, O.
Clark Bros., Belmont, N. Y.
Comstock, Geo. S., Mechanicsburg, Pa.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Farquhar, A. B., Co., Ltd., York, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Frick Co., Waynesboro, Pa.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Heilman Machine Works, Evansville, Ind.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Lovell Machine Works, Fitchburg, Mass.
Mecklenburg Iron Works, Charlotte N. C.
Perkins & Co., Grand Rapids, Mich.
Phoenix Mfg. Co., Eau Claire, Wis.
Prescott, D. Clint. Co., Menominee, Wis.
Richmond Machine Works, Richmond, Ind.
Robinson & Co., Richmond, Ind.
Rockwood Mfg. Co., Indianapolis, Ind.
Russell & Co., Massillon, O.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Wheland's Machine Works, Chattanooga, Tenn.

210 **SAW MILL HEAD BLOCKS.** Cross Blocks on which the heads of the logs rest.

Adams, S., & Son, Rome, N. Y.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..
American Seeding Machine Co., Springfield, Ohio.
Aultman & Taylor Machinery Co., Mansfield, O.
Chandler & Taylor Co., Indianapolis, Ind.

SAW MILL HEAD BLOCKS, continued

Clark Bros., Belmont, N. Y.
Comstock, Geo. S., Mechanicsburg, Pa.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Farquhar, A. B., Co., Ltd., York, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Frick Co., Waynesboro, Pa.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Mecklenburg Iron Works, Charlotte, N. C.
Memphis Machine Works, Memphis, Tenn.
New Birdsall Co., Auburn, N. Y.
Prescott, D. Clint Co., Menominee, Wis.
Reeves & Co., Columbus, Ind.
Robinson & Co., Richmond, Ind.
Richmond Machine Works, Richmond, Ind.
Rockwood Mfg. Co., Cincinnati, O.
Sinker-Davis Co., Indianapolis, Ind.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machy. Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Struthers-Wells Co., Warren, Pa.
Wickes Bros., Saginaw, Mich.
Willamette Iron & Steel Wcrks, Portland, Ore.

211 **SAW MILL SET WORKS.** See all Saw Mill Makers.

212 **SHINGLE BOLTERS AND SAPPERS.** For preparing timber into blocks.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, W. E., & Co., Kalamazoo, Mich.
Lane Mfg. Co., Montpelier, Vt.
Lovell Machine Works, Fitchburg, Mass.
Lyon Iron Works, Greene, N. Y.
Novelty Iron Works, Dubuque, Ia.
Perkins & Co., Grand Rapids, Mich.
Phoenix Mfg. Co., Eau Claire, Wis.
Trevor Mfg. Co., Lockport, N. Y.
Wickes Bros., Saginaw, Mich.

213 **SHINGLE JOINTERS.** For trimming edges of shingles.

Adams, S., & Son, Rome, N. Y.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..

SHINGLE JOINTERS, continued

De Loach Mill Mfg. Co., Aalanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Gerlach, Peter, & Co., Cleveland, O.
Howell, R. R., Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt.
Lovell Machine Works, Fitchburg, Mass.
Novelty Iron Works, Dubuque, Ia.
Trevor Mfg. Co., Lockport, N. Y.
Wickes Bros., Saginaw, Wis.

214 SHINGLE KNIVES. See 120, Shingle Knives.

215 SHINGLE MACHINES. For sawing shingles.

Adams, S., & Son, Rome, N. Y.
American Seeding Machine Co., Springfield, Ohio.
Butterworth & Lowe, Grand Rapids, Mich.
Chandler & Taylor Co., Indianapolis, Ind.
Chase Turbine Mfg. Co., Orange, Mass.
Curtis & Co. Mfg. Co., St. Louis, Mo.
Davis, George E., Dubuque, Iowa.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Farquhar, A. B., Co., Ltd., York, Pa.
Fisher & Davis, St. Louis, Mo.
Gibbes, W. H., Co., Columbia, S. C.
Howell, R. R. & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Lovell Machine Works, Fitchburg, Mass.
Lyon Iron Works, Greene, N. Y.
Mitchell, Lewis & Staver Co., Seattle, Wash.
Novelty Iron Works, Dubuque, Ia.
Perkins & Co., Grand Rapids, Mich.
Tacoma Brass & Machine Works, Tacoma, Wash.
Trevor Mfg. Co., Lockport, N. Y.

216 SHINGLE PACKERS. For packing shingles.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..
American Seeding Machine Co., Springfield, Ohio.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Howell, R. R., & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Lovell Machine Works, Fitchburg, Mass.
Mitts & Merrill, Saginaw, Mich.
Novelty Iron Works, Dubuque, Ia.
Perkins & Co., Grand Rapids, Mich.
Trevor Mfg. Co., Lockport, N. Y.
Wickes Bros., Saginaw, Mich.

217 **SHINGLE PLANERS.** For planing shingles.

American Seeding Machine Co., Springfield, Ohio.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Novelty Iron Works, Dubuque, Ia.
Trevor Mfg. Co., Lockport, N. Y.

217A **SHINGLE SAW GRINDERS.** See 145A, Saw Grinders, Shingle.

218 **SHINGLE SAWS.** See 142, Shingle Saws.

219 **SLAB CONVEYORS.** See 175, Log and Slab Conveyors.

220 **SLAB SLASHERS.** For cutting the edges and slabs from lumber into required lengths.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Link-Belt Machinery Co., 39th St. and Stewart Ave., Chicago, Ill.
Link, E. M., Machinery Co., Erie, Pa.
Prescott D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Standard Saw Mill Machinery Co., Erie, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

221 **SLITTING SAW TABLES.** See 422, Circular Saw Machines.

222 **STEAM BOARD LIFTERS.** For lifting boards by steam.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..
Diamond Iron Works, Minneapolis, Minn.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Wickes Bros., Saginaw, Mich.

223 **STEAM CANT TRIPS.** For catching the logs before they strike the rolls, and throwing them over on to the gang skids.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..
Chattanooga Machinery Co., Chattanooga, Tenn.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.

STEAM CANT TRIPS, continued

Hill, Wm. E., & Co., Kalamazoo, Mich.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

224 **STEAM CARRIAGE FEEDS.** For driving a saw carriage.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill..
Curtis & Co., Mfg. Co., St. Louis, Mo.
Diamond Iron Works, Minneapolis, Minn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Pawling & Harnischfeger, Milwaukee, Wis.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Soule Steam Feed Works, Meridian, Miss.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

225 **STEAM LOG TURNERS.** For turning logs by steam.

Allis- Chalmers Co., New York Life Bldg., Chicago, Ill.
Diamond Iron Works, Minneapolis, Minn.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Howell, R. R., & Co., Minneapolis, Minn.
Prescott, D. Clint, Co., Menominee, Wis.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Stearns Mfg. Co., Erie, Pa.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.

226 **SURFACERS.** See 379, Planers.

227 **TIMBER GAINING MACHINES.** For cutting gains in timber.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Woods, S. A., Machine Co., South Boston, Mass.

228 **TIMBER GAGES.** See 318 under Gages.

229 **TIMBER SIZERS.** See 386, Timber Planers.

230 WHEEL MACHINERY.

231 **AXLE CAP FITTING MACHINES.** For fitting the caps on wheel axles.

Bentel & Margedant Co., Hamilton, O.

232 **AXLE GAINING MACHINES.** For cutting the gains on axles.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.

233 **BOLTING AND CAPPING MACHINES.** For putting the bolts in wheels and capping them.

Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

234 **BORING MACHINES, HUB.** For boring the hubs of wheels.

Abbott & Co., Hudson, Mich.
Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Holbrook-Armstrong Iron Co., Racine, Wis.
Kane & Roach, Syracuse, N. Y.
Silver Mfg. Co., Salem, O.
Smith, Philip, Sidney, O.

235 **BORING AND BOXING MACHINES.** For boring out wheel hubs for the insertion of the iron boxes.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349, W. Front St., Cincinnati, O.
Silver Mfg. Co., Salem, O.

236 **BORING AND SCREW DRIVING MACHINES.** For boring screw holes and inserting screws in wheel rims, etc.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.
Dennis Machine Co., Jackson, Mich.

237 **COMPRESSING MACHINES, SPOKE TENON.** For compressing the tenon on the end of wheel spokes facilitating the insertion in the hub.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

238 **CUTTING OFF, TENONING AND RIM DRESSING MACHINES.** For cutting off and tenoning the ends of wheel spokes, and dressing wheel rims.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.
Dennis Machine Co., Jackson, Mich.

239 **CUT-OFF OR SQUARING MACHINES.** For squaring timber ends.

Bentel & Margedant Co., Hamilton, O.

CUT-OFF MACHINES, continued

Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

240 **EXPANDING MACHINES, HUB BAND.** For expanding the hub bands of wheels.

Bentel & Margedant Co., Hamilton, O.

241 **FACING MACHINES, SPOKE.** For squaring up the two edges of wagon or buggy wheel spokes after being turned out and finished.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

242 **FACING MACHINES, WHEEL.** For squaring the spokes at the point of the wheel hub so an iron flange placed over the hub will fit close against the spokes.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.

243 **FELLOE MACHINES.** For making felloes or rims of wheels.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Smith, Philip, Sidney, O.

244 **LATHES, HUB.** For turning wheel hubs.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Smith, Philip, Sidney, O.
Smith, H. B., Machine Co., Smithville, N. J.

245 **LATHES, SPOKE.** For turning wheel spokes.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Merritt Mfg. Co., Lockport, N. Y.

246 **MORTISERS, HUB.** For mortising the hubs of wheels.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hobbs Mfg. Co., Worcester, Mass.
Smith, H. B., Machine Co., Smithville, N. J.

247 **POLISHING AND FINISHING MACHINES.** For finishing and polishing wheels.

Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

248 **PRESSES, WHEEL BOX.** For pressing boxes into wheels, or placing flanges or bands over the same.

Bentel & Margedant Co., Hamilton, O.
Dennis Machine Co., Jackson, Mich.
Holbrook-Armstrong Iron Co., Racine, Wis.
Kane & Roach, Syracuse, N. Y.

249 **REAMING MACHINES, HUB.** For enlarging and boring taper holes in hubs so they can be driven on a standard mandrel for turning and other operations.

Bentel & Margedant Co., Hamilton, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

250 **ROLLING MACHINES, HUB BAND.** For welding, rolling and forming iron bands placed about hubs to prevent splitting, etc.

Bentel & Margedant Co., Hamilton, O.
Holbrook-Armstrong Iron Co., Racine, Wis.

251 **SAWS, CUT-OFF AND EQUALIZING.** For cutting off both ends of spokes.

Bentel & Margedant Co., Hamilton, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

252 **SAWS, HUB BLOCK CUT-OFF.** For cutting the rough hub to a standard length.

Bentel & Margedant Co., Hamilton, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

253 **SHAVERS, SPOKE.** A tool used for shaving spokes.

Cincinnati Tool Co., Cincinnati, Ohio
Smith, Seymour & Son, Oakville, Conn.
Union Mfg. Co., New Britain, Conn.

254 **SHAVING MACHINES, SPOKE.** For shaving spokes.

Defiance Machine Works, Defiance, O.

255 **SPOKE SANDING MACHINES.** For sanding the spokes of wheels.

Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Klotz Machine Co., Sandusky, O.

256 **TENONING MACHINES, SPOKE.** For tenoning spokes.

Bentel & Margedant Co., Hamilton, O.
Cincinnati Tool Co., Cincinnati, Ohio.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Kane & Roach, Syracuse, N. Y.
Klotz Machine Co., Sandusky, O.
Silver Mfg. Co., Salem, O.
Stearns, E. C., & Co., Syracuse, N. Y.

257 **THROATING MACHINES, SPOKE.** For throating spokes.

Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Klotz Machine Co., Sandusky, O.

258 **TRUING MACHINES, TIRE.** For rolling the tires of wheels into their proper position on the rims.

Bentel & Margedant Co., Hamilton, O.
Dennis Machine Co., Jackson, Mich.

---

259 WOOD WORKING MACHINERY.

260 **BENCHES.** Work benches for cabinet makers.

Grand Rapids Hand Screw Co., Grand Rapids, Mich.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

261 **BITS, MACHINE.** Tools used in boring machines.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Ford Augur Bit Co., Holyoke, Mass.
Gardner Machine Works, Gardner, Mass.
Greenlee Bros. & Co., 225 West 12th St. Chicago, Ill.
Hardisty & Co., Cincinnati, O.
Irwin Auger Bit Co., Wilmington, O.
Ohio Tool Co., Columbus, O.
Pryibil, P., 512 West 41st St., New York.
Pugh, Job T., 31st and Ludlow Sts., Philadelphia, Pa.
Standard Tool Co., Cleveland, O.
Woods, S. A., Machine Co., South Boston, Mass.

262 **BORING MACHINES.** For general wood boring.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
See adv. page 91.
Andrew, M. L., & Co., 118 W. 2d St., Cincinnati, Ohio.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Chattanooga Machinery Co., Chattanooga, Tenn.
Colladay, Joseph O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Defiance Machine Works, Defiance, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Fisher & Davis, St. Louis, Mo.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.
Goodspeed Machine Co., Winchendon, Mass.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St. Chicago, Ill.

BORING MACHINES, continued.

Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York. *See adv. page 88.*
Ross, Josiah, Buffalo, N. Y.
Seymour & Whitlock, Newark, N. J.
Smith, H. B., Machine Co., Smithville, N. J.
Snell Mfg. Co., Fiskdale, Mass.
Stow Mfg. Co., Binghamton, N. Y.
Streeter, Alvin, Mfg. Co., So. Hingham, Mass.
Swan, Jas., Co., Seymour, Conn.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O. *See adv. page 85.*
Trevor Mfg. Co., Lockport, N. Y.
White, John A., Co., Dover, N. H.
Whitney, Baxter D., & Son, Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo. *See adv. page 99.*

263 **Bench.** Fastened to work bench; cutting tools carried on an arbor in a horizontal position.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Power, L., & Co., 20 South 23d St. Philadelphia, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

264 **Car.** For boring the holes in car frames and sills.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Cincinnati Tool Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Snell Mfg. Co., Fiskdale, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

265 **Carpenter's Hand.** Hand tools used for boring small holes.

Jennings, C. E., & Co., 101 Reade St., New York.
Kellogg, Wm. P., Troy, N. Y.
Millers Falls Co., Millers Falls, Mass.
Snell Mfg. Co., Fiskdale, Mass.

266 **Floor.** For boring nail holes in floor boards.

American Wood Working Machy. Co., 136 Liberty St., N. Y.

BORING MACHINES, FLOOR, continued

Chattanooga Machinery Co., Chattanooga, Tenn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Garden City Fan Co., 42 So. Clinton St., Chicago, Ill.
Sherman, W. S., Co., Milwaukee, Wis.
Woods, S. A., Machine Co., South Boston, Mass.

267 **Gang.** See 269, Multiple Boring Machines.

268 **Horizontal.** See 262, Boring Machines.

269 **Multiple.** Machines having more than one boring spindle in vertical or horizontal position.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fischer Machine Works, 345 S. Canal St., Chicago, Ill.
Fox Machine Co., Grand Rapids, Mich.
Garden City Fan Co., 42 So. Clinton St., Chicago, Ill.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Nash, J. M., 131 Ferry St., Milwaukee, Wis.
Pringle & Brodie Machinery Co., 277 S. Canal St., Chicago, Ill.
Pryibil, P., 512 West 41st St., New York. *See adv. page 88.*
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
West Side Iron Works, Grand Rapids, Mich.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

270 **Pin Hole.** For boring holes in joined work for dowel pins.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Stow Mfg. Co., Binghamton, N. Y.
Woods, S. A., Machine Co., South Boston, Mass.

271 **Portable.** That can be readily transported to the work.

Barnes, W. F., & John Co., Rockford, Ill.
Defiance Machine Works, Defiance, O.
Snell Mfg. Co., Fiskdale, Mass.
Stow Mfg. Co., Binghamton, N. Y.

272 **Portable Radial.** For boring at any radius, usually attached to a post or vertical support.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Pryibil, P., 512 West 41st St., New York.
Woods, S. A., Machine Co., South Boston, Mass.

273 **Post.** Fastened to a vertical support; cutting tool carried on a vertical spindle.

American Wood Working Machy. Co., 136 Liberty St., N. Y.

BORING MACHINES, POST, continued

Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fox Machine Co., Grand Rapids, Mich.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Ross, Josiah, Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
White, John A., Co., Dover, N. H.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

274 **Pulley.** For boring mortises for window frame pulleys.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Mitts & Merrill, Saginaw, Mich.

275 **Spindle.** In which the boring tools are carried in spindles.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

276 **BORING MACHINE AUGERS.** Boring tools used in boring machines.

Bentel & Margedant Co., Hamilton, O.
Ford Augur Bit Co., Holyoke, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hibbard, G. B., Mfg. Co., Grand Rapids, Mich.
Irwin Auger Bit Co., Wilmington, Del.
Jennings, C. E., & Co., 101 Reade St., New York.
Ohio Tool Co., Columbus, O.
Pryibil, P., 512 West 41st St., New York.
Pugh, Job. T., Cor. 31st and Ludlow Sts., Philadelphia, Pa.
Snell Mfg. Co., Fiskdale, Mass.
Woods, S. A., Machine Co., South Boston, Mass.

277 **CAR CUT-OFF AND GAINING MACHINES.** For cutting off and grooving cross grain in framing used in car construction.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hobbs Mfg. Co., Worcester, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

278 **CARVING MACHINES.** For reproducing the facsimile of hand carving and decorations.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
American Steam Pump Co., Battle Creek, Mich.
Cordesman Machine Co., Cincinnati, O.
Dodds, Alexander, Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Moore Carving Machine Co., Minneapolis, Minn.
Mosely Lathe Co., Elgin, Ill.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
See adv. page 85.
Valley City Machine Works, Grand Rapids, Mich.

279 **CARVING MACHINE CUTTERS.** See 115, Knives.

279A **CHUCKING MACHINES.** For rounding the ends of handles, for chair and turned work; also for turning tenons on ladder rounds, handles, etc.

Merritt Mfg. Co., Lockport, N. Y.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.

280 **CLAMPS, DOOR.**

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Cincinnati Tool Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Yerkes & Finan Wood Working Machinery Co., St. Louis, Mo.

281 **CLAMPS, JOINERS'.** For clamping work while being joined.

Batavia Clamp Co., Batavia, N. Y.
Cincinnati Tool Co., Cincinnati, O.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Loetscher, A. A., Dubuque, Iowa.

282 **CLAPBOARD MACHINERY.** For making clapboards.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Butterworth & Lowe, Grand Rapids, Mich.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Mershon, W. B., & Co., Saginaw, Mich.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass.

283 **CLOTHES-PIN MACHINES.** For the production of clothes-pins.

Goodspeed Machine Co., Winchendon, Mass.

CLOTHES-PIN MACHINES, continued

Humphrey Machine Co., Keene, N. H.

284 **CORE BOX MACHINES.** For making patterns and core boxes.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Crane, Jos. A., & Co., Rochester, N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

285 **CORNER BLOCK MACHINES.** For producing an exact mitre of mouldings when joined; and a higher decorative effect.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Pryibil, P., 512 W. 41st St., New York. *See adv. page 88.*
Smith, H. B., Machine Co., Smithville, N. J.

286 **CRIMPERS, BLIND SLAT.** For sharpening the ends of stationary slats to fit the mortises in the stiles.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Concord Machine Co., Concord, N. H.
Smith, H. B., Machine Co., Smithville, N.

287 **CURTAIN RING MACHINES.** For making curtain rings.

Chattanooga Machinery Co., Chattanooga, Tenn.
Pryibil, P., 512 West 41st St., New York. *See adv. page 88.*

288 **CUTTER HEADS, SASH.** Rotating pieces having cutting edges, used in Sash Cutting Machines.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Heald Machine Co., Worcester, Mass.
Hobbs Mfg. Co., Worcester, Mass.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Shimer, Samuel J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.

288A **CUTTERS, OVAL.** For cutting picture mats, photo prints, etc.

Shawver Co., Springfield, O.

289 **Window Frame Pocket.** For cutting out weight pockets of window frames.

Farwell, F. E., Fitchburg, Mass.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hobbs Mfg. Co., Worcester, Mass.
Smith & Phillips Mfg. Co., 99 W. Adams St., Chicago, Ill.

290 **DADO HEADS.** See 50, Grooving Machines.

Bentel & Margedant Co., Hamilton, O.
Huther Bros., Rochester, N. Y.
Lamson Cutter Head Co., 27 S. Canal St., Chicago, Ill.
Mattison, C., Machine Works, Beloit, Wis.

291 **DISK WHEELS, HAND.** See 408, Sand Papering Machines.

292 **DOVETAILING BITS.** See 115, Knives.

293 **DOVETAILING MACHINES.** For making dovetail joints.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
American Steam Pump Co., Battle Creek, Mich.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Dodds, Alexander, Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Goodspeed Machine Co., Winchendon, Mass. *See adv. page 98.*
Knapp Dovetailing Machine Co., Florence, Mass.
Pryibil, P., 512 West 41st St, New York. *See adv. page 88.*
Seymour & Whitlock, Newark, N. J.
Tidey, M. B, 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O. *See adv. page 85.*

294 **DRILL BITS, MACHINE.** The tools used in Drilling Machines.

Cincinnati Tool Co., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Silver Mfg. Co., Salem, O.
Tidey, M. B., 86 Warren St., Newark, N. J.

295 **DRY KILNS.** See Finding List.

296 **EDGERS.** For edging and sawing planks or boards into joist, scantling, flooring, etc.

American Seeding Machine Co., Springfield, Ohio.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Baxter Machine Co., Lebanon, N. H.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Butterworth & Lowe, Grand Rapids, Mich.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Garland, M., Co., Bay City, Mich.
Gordon Hollow Blast Grate Co., Greenville, Mich.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Howell, R. R., & Co., Minneapolis, Minn.
Kline, Lewis T., Alpena, Mich.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Larzelere Machine Co., Williamsport, Pa.
Mecklenburg Iron Works, Charlotte, N. C.
Mershon W. B., & Co., Saginaw, Mich.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.

EDGERS, continued

Richmond Machine Works, Richmond, Ind.
Royle, John, & Sons, Paterson, N. J.
Scott, Olin, Bennington, Vt.
Smith, H. B., Machine Co., Smithville, N. J.
Standard Saw Mill Machinery Co., Erie, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

297 **Double.** See 428, Edging Saw Machines.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chattanooga Machinery Co., Chattanooga, Tenn.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Gardner Machine Works, Gardner, Mass.
Gordon Hollow Blast Grate Co., Greenville, Mich.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Luther, B. G., & Co., Worcester, Mass.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Wickes Bros., Saginaw, Mich.

298 **Gang.** Having two or more saws for ripping boards and planks to uniform widths.

Adams, S., & Son, Rome, N. Y.
Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d & Arch Sts., Philadelphia, Pa.
Bartlett, A. F., & Co., Saginaw, Mich.
Berlin Machine Works, Beloit, Wis.
Brady, M. E., & Co., Manistee, Mich.
Butterworth & Lowe, Grand Rapids, Mich.
California Saw Works, 208-212 Mission St., San Francisco, Cal.
Challoner Co., Oshkosh, Wis.
Chandler & Taylor Co., Indianapolis, Ind.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Curtis & Co. Mfg. Co., St. Louis, Mo.
Davenport Foundry & Machine Co., Davenport, Ia.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Elliott, George E., Calais, Me.
Farquhar, A. B., Co., Ltd., York, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Filer & Stowell Co., Ltd., Milwaukee, Wis.

EDGERS, GANG, continued.

Fisher & Davis, St. Louis, Mo.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Gordon Hollow Blast Grate Co., Greenville, Mich.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hench & Dromgold, York, Pa.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Jeffrey Mfg. Co., Columbus, O.
Keebner & Sons, Lansdale, Pa.
Kehoe, Wm., & Co., Savannah, Ga.
Keystone Iron Works, Fort Madison, Ia.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Link Belt Machinery Co., 39th St. and Stewart Ave., Chicago, Ill.
Lovell Machine Works, Fitchburg, Mass.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Lyon Iron Works, Greene, N. Y.
McDonough Mfg. Co., Eau Claire, Wis.
Michigan Iron Works, Grand Rapids, Mich.
Mitts & Merrill, Saginaw, Mich.
Murray Iron Works Burlington, Iowa.
Perkins & Co., Grand Rapids, Mich.
Phoenix Mfg. Co., Eau Claire, Wis.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Prescott, D. Clint, Co., Menominee, Wis.
Randle Machinery Co., 206 Water St., Cincinnati, O.
Rodgers Iron Mfg. Co., Muskegon, Mich.
Russell & Co., Massillon, O.
Sinker-Davis Co., Indianapolis, Ind.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Smith, H. B., Machine Co., Smithville, N. J.
Soule Steam Feed Works, Meridian, Miss.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Trevor Mfg. Co., Lockport, N. Y.
Union Iron Works, Minneapolis, Minn.
Union Malleable Iron Co., East Moline, Ill.
Wheland's Machine Works, Chattanooga, Tenn.
Wickes Bros., Saginaw, Mich.
Willamette Iron & Steel Works, Portland, Ore.
Woods, S. A., Machine Co., South Boston, Mass.

299 **EDGING GRINDERS.** For cutting wood into coarse or fine chips suitable for handling by a chain conveyor or blower.

Mitts & Merrill, Saginaw, Mich.

300 **EDGING TABLES.** For ripping and truing the edges of boards.

American Wood Working Machy Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.

EDGING TABLES, continued.

Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Lovell Machine Works, Fitchburg, Mass.
Luther, B. G., & Co., Worcester, Mass.
Mecklenburg Iron Works, Charlotte, N. C.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Robinson & Co., Richmond, Ind.
Rodgers Iron Mfg. Co., Muskegon, Mich.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.

301 **EDGING AND SLITTING TABLES.** For edging and slitting boards and planks.

American Wood Working Machy Co., 136 Liberty St., New York.
Baxter Machine Co., Lebanon, N. H.
Bentel & Margedant Co., Hamilton, O.
Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wickes Bros., Saginaw, Mich.

302 **EXCELSIOR MACHINERY.** For reducing lumber to shavings known as "Excelsior."

Fisher & Davis, St. Louis, Mo.
Indianapolis Excelsior Manufactory, Indianapolis, Ind.
Kline, Lewis T., Alpena, Mich.
Merrill Iron Works, Merrill, Wis.

303 **FANS, SHAVINGS AND DUST.** See Finding List.

304 **FELLOE MACHINERY.** See 243, Felloe Machines.

305 **FLOOR BOARD BORING, MARKING AND MEASURING MACHINES.** For boring and measuring floor boards.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Woods, S. A., Machine Co., South Boston, Mass.

306 **FLOOR BORING MACHINES.** See 266, Boring Machines, Floor.

307 **FLOORING BUTTING MACHINES.** For cutting, trimming and squaring flooring.

Lane Mfg. Co., Montpelier, Vt.
Sherman, W. S., Co., Milwaukee, Wis.
Smith, H. B., Machine Co., Smithville, N. J.

308 **FLOORING END MATCHING MACHINES.** For working tongued and grooved ends in floor and ceiling boards.

Berlin Machine Works, Beloit, Wis.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Sherman, W. S., Co., Milwaukee, Wis.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

309 **FLOORING MACHINES.** For making tongued and grooved boards.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenleaf Wood Working Machine Co., Baltimore, Md. *See adv. page 90.*
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

310 **FOOT POWER MACHINERY.**

Barnes Tool Co., New Haven, Conn.
Barnes, W. F., & John Co., Rockford, Ill.
Crescent Machine Co., Leetonia, O.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 93.*
Narragansett Machine Co., Providence, R. I.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*

311 **FORMERS, FOOT POWER.** Forming machines operated by foot power.

Ball Bearing Machinery Co., Cincinnati, O.
Barnes, W. F., & John Co., Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

312 **GANG SAWS.** See 138, Saw Blades, Gang.

313 **GAGES.**

314 **Cutting.** For regulating the dimensions to be cut.

Jones, Winfred E., Rochester, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

315 **Ceiling and Flooring.** Standard sizes for tongues and grooves and thicknesses of boards.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Smith, H. B., Machine Co., Smithville, N. J.

316 **Dimension.** For gauging work to be cut to a dimension.

Atkins, E. C., & Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

317 **Saw.**

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Atkins, E. C., & Co., Indianapolis, Ind.
Barnes, W. F., & John Co., Rockford, Ill.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Canton Saw Co., Canton, O.
Chattanooga Machinery Co. Chattanooga, Tenn.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Covel Mfg. Co., 8 S. Canal St., Chicage, Ill.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Disston, Henry, & Sons, Inc., Front and Laurel Sts., Philda.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Garland, M., Co., Bay City, Mich.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lovell Machine Works, Fitchburg, Mass.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
National Saw Co., Newark, N. J.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Simonds Mfg. Co., Fitchburg, Mass. *See adv. page 82.*
Sinker-Davis Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, I. L., Evansville, Ind.

GAGES, SAW, continued.

Specialty Mfg. Co., 23 Canal St., Grand Rapids, Mich.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Washington Pulley Co., Ballard, Wash.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St Louis, Mo.

318 **Timber.**

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Smith, H. B., Machine Co., Smithville, N. J.

319 **GLUE HEATERS.** For heating glue.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wetmore Glue Tank Co., Toledo, Ohio.

320 **GLUE JOINTERS.** For edges and surfaces to be joined.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Berlin Machine Works, Beloit, Wis.
Buss Machinery Co., Muskegon, Mich.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Linderman Mfg. Co., Inc., Whitehall, Mich.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
See adv. page 85.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

321 **GLUE SPREADING MACHINES.** For spreading glue.

Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Luther, B. G., & Co., Worcester, Mass.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.

322 **GLUE TESTING APPARATUS.** For testing the quality of glue.

Nichols Dryer Co., Cincinnati, Ohio.

323 **GRINDING MACHINES, PLANER KNIFE.** For grinding planer knives.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Bentel & Margedant Co., Hamilton, O.
Bridgeport Emery Wheel Co., Bridgeport, Conn.
Builders Iron Foundry, Providence, R. I.
Capital Machine Works, Indianapolis, Ind.
Cordesman Machine Co., Cincinnati, O.

GRINDING MACHINES, PLANER KNIFE, continued

Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, O.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Machine Co., Providence, R. I. *See adv. page 76.*
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Fisher & Davis, St. Louis, Mo.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hampden Corundum Wheel Co., Springfield, Mass.
Hobbs Mfg. Co., Worcester, Mass.
Hodgkins, C. & A., Co., Marlboro, N. H.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Merritt Mfg. Co., Lockport, N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Robertson Mfg. Co., 1848 Niagara St., Buffalo, N. Y.
Rogers, S. C., & Co., Buffalo, N. Y.
Ross, Josiah, Buffalo, N. Y.
Safety Emery Wheel Co., Springfield, Ohio.
Smith, H. B., Machine Co., Smithville, N. J.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Mfg. Co., Tiffin, Ohio.
Tanite Co., Stroudsburg, Pa.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O. *See adv. page 85.*
White, John A., Co., Dover, N. H.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo. *See adv. page 99.*

324 **HANDLE THROATERS.** See 337, Handle Lathes.

325 **JOINERS' BENCH BLOCKS.** For supporting work on joiners' benches.

Cordesman Machine Co., Cincinnati, O.
Runge Mfg. Co., Meriden, Conn.
Smith, H. B., Machine Co., Smithville, N. J.

326 **JOINTERS.** See 380, Buzz Planers.

327 **JOINTER HEADS.** Appliances to carry the cutting tools.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Luther, B. G., & Co., Worcester, Mass.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Shimer, Sam'l J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

328 **JOINTING AND DOWELING MACHINES.** For making glue joints, dowels, etc.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Perkins & Co., Grand Rapids, Mich.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass.

329 **KNIFE BALANCING MACHINES.** For determining the correct balance of each knife or tool in a set.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hankey, A., & Co., Rochdale, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Wickes Bros., Saginaw, Mich.

330 **KNIFE GRINDING MACHINES.** See 323, Grinding Machines, Planer Knife.

331 **LATHES.**

332 **Axle-Tree.** Automatic machines to turn axle-trees.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Defiance Machine Works, Defiance, O.
Smith. H. B., Machine Co., Smithville, N. J.

333 **Back Knife.** Automatic lathes for turning variety work, the pattern being worked in a knife.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Cowdrey, C. H., Machine Works, Fitchburg, Mass. *See adv. page 100.*
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Gardner Machine Works, Gardner, Mass.
Goodspeed Machine Co., Winchendon, Mass. *See adv. page 98.*
Pringle & Brodie Machinery Co., 227 S. Canal St., Chicago, Ill.
Smith, H. B., Machine Co., Smithsville, N. J.
Waymoth, A. D., & Co., Fitchburg, Mass.
Whitney, Baxter D., & Son, Winchendon, Mass.

334 **Foot Power Wood Turning.** Small lathes operated by foot power.

Barnes, W. F., & John Co., Rockford, Ill.

LATHES, FOOT POWER, continued

Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.

335 **Gage.** For turning wooden handles, etc.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Goodspeed Machine Co., Winchendon, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Merritt Mfg. Co., Lockport, N. Y.
Novelty Iron Works, Dubuque, Ia.
Pringle & Brodie Machinery Co., 227 S. Canal St., Chicago, Ill.
Smith, H. B., Machine Co., Smithville, N. J.
Trevor Mfg. Co., Lockport, N. Y.
Waymoth, A. D., & Co., Fitchburg, Mass.
Whitney, Baxter D., & Son, Winchendon, Mass.

336 **Golf Club Turning.** Automatic Lathes for making golf clubs.

Kimball Bros. & Sprague, Brockton, Mass.
Smith, H. B., Machine Co., Smithville, N. J.

337 **Handle.** Automatic machines for turning handles.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Bentel & Margedant Co., Hamilton, O
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Klotz Machine Co., Sandusky, O.
Merritt Mfg. Co., Lockport, N. Y.
Ober Mfg. Co., Chagrin Falls, Ohio.
Smith, H. B., Machine Co., Smithville, N. J.
Trevor Mfg. Co., Lockport, N. Y.
Waymoth, A. D., & Co., Fitchburg, Mass.

338 **Hub.** See 244, Lathes, Hub.

339 **Pattern Makers'.** Consisting of regular head and tail stock with usual lathe accessories.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O. *See adv. page 91.*
Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Fay & Scott, Dexter, Me.
Fitchburg Machine Works, Fitchburg, Mass.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.

LATHES, PATTERN MAKERS', continued

Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
New Haven Mfg. Co., New Haven, Conn.
Oliver Machinery Co., Grand Rapids, Mich.
Porter, C. O. & A. D., Grand Rapids, Mich.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York. *See adv. page 88.*
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Whitney, Baxter D., Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo. *See adv. page 99.*

340 **Spoke.** See 245, Lathes, Spoke.

341 **Variety.** For fancy turning or plain work where exact duplicates and accuracy are required.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Cowdrey, C. H., Machine Works, Fitchburg, Mass. *See adv. page 100.*
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Frary, H. H., Berlin, N. Y.
Kline, Lewis T., Alpena, Mich.
Merritt Mfg. Co., Lockport, N. Y.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pringle & Brodie Machinery Co., 227 S. Canal St., Chicago, Ill.
Waymoth, A. D., & Co., Fitchburg, Mass.

342 **Wood Turning.** For turning or cutting round or cylindrical articles.

American Steam Pump Co., Battle Creek, Mich.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes, W. F., & John Co., Rockford, Ill. *See adv. page 93.*
Baxter Machine Co., Lebanon, N. H. *See adv. page 89.*
Bentel & Margedant Co., Hamilton, O.
Booth, O. N., & Co., Monroeton, Pa.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fay & Scott, Dexter, Me.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gilman & Son, Springfield, Vt.
Goodspeed Machine Co., Winchendon, Mass.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.

LATHES, WOOD TURNING, continued.

Hobbs Mfg. Co., Worcester, Mass.
Luther, B. G., & Co., Worcester, Mass.
Mattison, C., Machine Works, Beloit, Wis.
Mecklenburg Iron Works, Charlotte, N. C.
Merritt Mfg. Co., Lockport, N. Y.
New Haven Mfg. Co., New Haven, Conn.
Ober Mfg. Co., Chagrin Falls, Ohio.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pringle & Brodie Machinery Co., 277 S. Canal St., Chicago, Ill.
Pryibil, P., 512 West 41st St., New York. *See adv. page 88.*
Reed, F. E., Co., Worcester, Mass.
Ross, Josiah, Buffalo, N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O. *See adv. page 85.*
Trevor Mfg. Co., Lockport, N. Y.
Walker, D. F., 57 Laurel St., Philadelphia, Pa.
Waymoth, A. D., & Co., Fitchburg, Mass.
West Side Iron Works, Grand Rapids, Mich.
White, John A., Co., Dover, N. H.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

343 LATHE ACCESSORIES.

344 Back Rests.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Moore, Frank K., 145 Oliver St., Boston, Mass. *See adv. page 98.*
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.

345 Chisel Calipers.

Smith, H. B., Machine Co., Smithville, N. J.

346 Lathe Chucks.

Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Union Mfg. Co., New Britain, Conn.
Woods, S. A., Machine Co., South Boston, Mass.

347 Plug Cutters.

Cincinnati Tool Co., Cincinnati, O.
Cordesman Machine Co., Cincinnati, O.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Swan, Jas., Co., Seymour, Conn.
Woods, S. A., Machine Co., South Boston, Mass.

LATHE ACCESSORIES, continued

348 **Turners' Sizers.**

Smith, H. B., Machine Co., Smithville, N. J.

349 **LATH MACHINES.** See 171, Lath Mills.

350 **LUMBER MILL MACHINERY.** See 187, Lumber Mill machines

351 **MANDRELS, CIRCULAR SAW.** The arbors or mandrels on which circular saws run.

Adams, S., & Son, Rome, N. Y.
Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Ins. Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atkins, E. C., & Co., Indianapolis, Ind.
Barnes, W. F., & John Co., Rockford, Ill.
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Branch Saw Co., 817 No. 2d St., St. Louis, Mo.
Capital City Machine Works, Columbus, Ohio.
Chandler & Taylor Co., Indianapolis, Ind.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Decker, E. C., cor. Church and Bleecker Sts., Albany, N. Y.
De Loach Mill Mfg. Co., Atlanta, Ga.
Diamond Iron Works, Minneapolis, Minn.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gardner Machine Works, Gardner, Mass.
Grammes, L. F. & Sons, Allentown, Pa.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Liddell Co., Charlotte, N. C.
Luther, B. G., & Co., Worcester, Mass.
Mecklenburg Iron Works, Charlotte, N. C.
National Saw Co., Newark, N. J.
Novelty Iron Works, Dubuque, Ia.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pacific Saw Mfg. Co., San Francisco, Cal.
Perkins & Co., Grand Rapids, Mich.

MANDRELS, CIRCULAR SAW, continued.

Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Robinson & Co., Richmond, Ind.
Ross, Josiah, Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Southern Saw Works, Atlanta, Ga.
Standard Saw Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Tidey, M. B., 86 Warren St., Newark, N. J.
Union Iron Works, Minneapolis, Minn.
Wheland's Machine Works, Chattanooga, Tenn.
White, John A., Co., Dover, N. H.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

352 MATCHERS. See 387, Planers and Matchers.

353 MATCHER ACCESSORIES.

354 Bit Setters.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Berlin Machine Works, Beloit, Wis.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Luther, B. G., & Co., Worcester, Mass.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Shimer, Samuel J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass.

355 MATCHER HEADS. For carrying tongue and groove cutting tools on Planers and Matchers. See also 327, Jointer Heads

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Luther, B. G., & Co., Worcester, Mass.
Power, L. & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Ross, Josiah, Buffalo, N. Y.
Shimer, Samuel J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

356 MITERING MACHINES. For cutting material in mitres.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Barnes Tool Co., New Haven, Conn.
Barnes, W. F., & John Co., Rockford, Ill.
Beach, H. W., Montrose, Pa.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Fox Machine Co., Grand Rapids, Mich.
Hobbs Mfg. Co., Worcester, Mass.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94-95.*
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seymour & Whitlock, Newark, N. J.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Washburn Shops, Worcester, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

357 MORTISERS, SASH PULLEY. For mortising window sashes for the pulleys.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Austin & Eddy, 115 Broad St., Boston, Mass.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.

358 MORTISING MACHINES. For hollowing out mortises for tenons.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Andrew, M. L., & Co., 118 W. 2d St., Cincinnati, Ohio.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes, W. F. & John, Co., Rockford, Ill. *See adv. page 93.*
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Black Bros. Machinery Co., Mendota, Ill.
Colladay, Joseph O., 626 Race St., Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Frank Machinery Co., 50-54 Mechanic St. Buffalo, N. Y.
Greenlee Bros., & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Pryibil, P., 512 West 41st St., New York.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Seymour & Whitlock, Newark, N. J.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

359 Car. Reciprocating machines for making the large mortises in car frame work.

American Wood Working Machy. Co., 136 Liberty St., N. Y.

MORTISING MACHINES, CAR, continued

Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hobbs Mfg. Co., Worcester, Mass.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

360 **Chain Saw.** Having the cutting tool in the shape of an endless chain with saw teeth.

New Britain Machine Co., New Britain, Conn. *See adv. page 86.*

361 **Foot Power.** Reciprocating machines operated by foot power.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Barnes, W. F., & John Co., Rockford, Ill.
Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hobbs Mfg. Co., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seymour & Whitlock, Newark, N. J.
Smith, H. B., Machine Co., Smithville, N. J.

362 **Hollow Chisel.** In which the cutting tool is a hollow chisel with a boring auger revolving within.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass.

363 **Horizontal.**

364 **Hub.** See 246, Mortisers, Hub.

365 **Vertical.**

366 **MORTISERS' CHISELS.** The cutting tools on mortising machines.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes, W. F., & John Co., Rockford, Ill.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Ohio Tool Co., Columbus, O.

MORTISERS' CHISELS, continued

Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass.

367 MORTISERS' STOCKS. Chucks for holding mortisers' chisels, fitted to the chisel bars of mortising machines.

Defiance Machine Works, Defiance, O.
Smith, H. B., Machine Co., Smithville, N. J.

368 MOULDING CUTTERS. Cutters used on moulding machines. See also 116, Machine Knives.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Barnes Tool Co., New Haven, Conn.
Barnes, W. F., & John Co., Rockford, Ill.
Bentel & Margedant Co., Hamilton, O.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hankey, A., & Co., Rochdale, Mass. *See adv. page 100.*
National Saw Co., Newark, N. J.
Orum, M. L., 503 N. 11th St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Taylor, Stiles & Co., Riegelsville, N. J.
Thomson, Wm. S., 418 West 27th St., New York.
White, L. & I. J., Co., 143 Perry St., Buffalo, N. Y.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

369 MOULDING MACHINES. For working lineal mouldings.

American Steam Pump Co., Battle Creek, Mich.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Barnes, W. F., & John Co., Rockford, Ill.
Baxter Machine Co., Lebanon, N. H. *See adv. page 89.*
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
Dodds, Alexander, Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Power, L. & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Whitney, Baxter D., & Son, Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

MOULDING MACHINES, continued.

370 **Spiral.** For turning spiral mouldings on table and chair legs, etc.

Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Pryibil, P., 512 West 41st St., New York. *See adv page 88.*
Shimer, Samuel J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.

371 **Variety.** See 372, Edge Moulding and Shaping Machines.

372 **MOULDING AND SHAPING MACHINES, EDGE.** For working mouldings on the edge of material of straight or irregular lines.

American Steam Pump Co., Battle Creek, Mich.
American Wood Working Machy. Co., 136 Liberty St., N. Y. *See adv. page 91.*
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baxter Machine Co., Lebanon, N. H. *See adv. page 89.*
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Carey, W. W., Lowell, Mass.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hermance Machine Co., Williamsport, Pa.
Hobbs Mfg. Co., Worcester, Mass.
Ober Mfg. Co., Chagrin Falls, Ohio.
Porter, C. O. & A. D., Grand Rapids, Mich.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York. *See adv page 88.*
Ross, Josiah, Buffalo, N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Shawver Co., Springfield, O.
Shimer Samuel J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O. *See adv. page 85.*
White, John A., Co., Dover, N. H.
Whitney, Baxter D., & Son, Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo. *See adv. page 99.*

373 **Spindle and Attachments.** In which the tools are carried on spindles

American Wood Working Machy. Co., 136 Liberty St., N. Y.

MOULDING AND SHAPING MACHINES, continued.

Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Moshannon Mfg. Co., Philipsburg, Pa.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Smith & Phillips Mfg. Co., 99 West Adams St., Chicago, Ill.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O
See adv. page 85.
Whitney, Baxter D., & Son, Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass.

374 **PANEL RAISERS.** For cutting and leveling panels for doors, etc.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Andrew, M. L., & Co., 118 W. 2d St., Cincinnati, Ohio.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Elliott & Stutzman, Williamsport, Pa.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hermance Machine Co., Williamsport, Pa.
Shimer, Sam'l, J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. E., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

375 **PICKET MACHINES.** For making fence pickets, slats for cratings, etc.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Chattanooga Machinery Co., Chattanooga, Tenn.
Curtis & Co., Mfg. Co., St. Louis, Mo.
De Loach Mill Mfg. Co., Atlanta, Ga.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fisher & Davis, St. Louis, Mo.
Gaar, Scott & Co., Richmond, Ind.
Smith, H. B., Machine Co., Smithville, N. J.

376 **Heading.** For heading pickets.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Smith, H. B., Machine Co., Smithville, N. J.

377 **Pointing.** For pointing pickets.

Berlin Machine Works, Beloit, Wis.
Smith, H. B., Machine Co., Smithville, N. J.
Standish, R., cor. Spring & Water Sts., Columbus, O.

378 **PIN MAKING AND POINTING MACHINES.** For making, pointing and cutting wooden pins used in joinery.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Smith, H. B., Machine Co., Smithville, N. J.

379 **PLANERS.** For planing and surfacing lumber.

American Wood Working Machy. Co., 136 Liberty St., N. Y. *See adv. page 91.*
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baker Bros., Toledo, O.
Baxter Machine Co., Lebanon, N. H. *See adv. page 89.*
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Berlin Machine Works, Beloit, Wis.
Chase Turbine Mfg. Co., Orange, Mass.
Cole Mfg. Co., Lakeport, N. H. *See adv. page 98.*
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O. *See adv. pages 77, 78, 79, 80.*
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Fisher & Davis, St. Louis, Mo.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Goodspeed Machine Co., Winchendon, Mass.
Grammes, L. F., & Sons, Allentown, Pa.
Greaves, Klusman & Co, Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Heath, W. A., Machine Co., Lestershire, N. Y.
Henderson, W. K., Iron Works & Supply Co., Ltd., Shreveport, La.
Hermance Machine Co., Williamsport, Pa.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Liddell Co., Charlotte, N. C.
Lovell Machine Works, Fitchburg, Mass.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 W. 41st St., New York.
Ross, Josiah, Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Streeter, Alvin, Mfg. Co., So. Hingham, Mass.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O *See adv. page 85.*
White, John A., Co., Dover, N. H.
Whitney, Baxter D., & Son, Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo. *See adv. page 99.*

380 **Buzz.** Having a revolving cutter head with table.

Adams, S., & Son, Rome, N. Y.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.

PLANERS, BUZZ, continued.

Baker Bros., Toledo, O.
Baxter Machine Co., Lebanon, N. H. *See adv. page 89.*
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Buss Machinery Co., Muskegon, Mich.
Carey, W. W., Lowell, Mass.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., Cincinnati, O.
Crescent Machine Co., Leetonia, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hermance Machine Co., Williamsport, Pa.
Hobbs Mfg. Co., Worcester, Mass.
Hodgkins, C. & A., Co., Marlboro, N. H.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Kane & Roach, Syracuse, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Lombard Iron Works & Supply Co., Augusta, Ga
Luther, B. G., & Co., Worcester, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Perkins & Co., Grand Rapids, Mich.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York. *See adv page 88.*
Ross, Josiah, Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Streeter, Alvin, Mfg. Co., So. Hingham, Mass.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
White, John A., Co., Dover, N. H.
Whitney, Baxter D., Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

381 **Daniels'.**

Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Hobbs Mfg. Co., Worcester, Mass.
Smith, H. B., Machine Co., Smithville, N. J.

382 **Dimension.** For planing to a dimension.

Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Lane Mfg. Co., Montpelier, Vt.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.

PLANERS, continued

383 **Double Surface.** See 379, Planers.

384 **Pony.** See 379, Planers.

385 **Radius.** For planing half circles such as carriage and wagon rims.

Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Smith, H. B., Machine Co., Smithville, N. J.

386 **Timber.** Heavy planers used for surfacing the four sides of heavy timbers.

American Wood Working Machy. Co., 136 Liberty St., N. Y. *See adv. page 91.*
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Power, L., & Co., 20 So. 23d St. Philadelphia, Pa.
Ross, Josiah, Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

387 **PLANERS AND MATCHERS.** For planing lumber and for working, tonguing and grooving.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Berlin Machine Works, Beloit, Wis.
Chase Turbine Mfg. Co., Orange, Mass.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenleaf Wood Working Machine Co., Baltimore, Md. *See adv. page 90.*
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Humphrey Machine Co., Keene, N. H.
Luther, B. G., & Co., Worcester, Mass.
Morgan Machine Co., Rochester, N. Y.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

388 **PLANERS, MATCHERS AND MOULDERS.** For planing, working, tonguing and grooving lineal mouldings.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Indiana Machine Works Co., Fort Wayne, Ind.
Liddell Co., Charlotte, N. C.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Randle Machinery Co., 206 Water St., Cincinnati, O.
Ross, Josiah, Buffalo, N. Y.
Salem Iron Works, Salem, N. C.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

389 **POLE AND SHAFT MACHINERY.** For tapering and finishing the bent ends of vehicle shafts and poles.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 N. Front St., Cincinnati, O.
Smith, H. B., Machine Co., Smithville, N. J.

390 **POLISHING MACHINES, SASH AND DOOR.** See 408, Sand Papering Machinery.

391 **RE-SAWING MACHINES.** For re-sawing planks and boards.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.

RE-SAWING MACHINES, continued

Howell, R. R., & Co., Minneapolis, Minn.
Mershon, W. B., & Co., Saginaw, Mich.
Power, L., & Co. 20 So. 23d St. Philadelphia, Pa.
Randle Machinery Co., 206 Water St., Cincinnati, O.
Ross, Josiah, Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo. *See adv. page 99.*

392 **RE-SAWS, BLIND SLAT.**

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Smith, H. B., Machine Co., Smithville, N. J.

393 **Band.** For cutting lumber, having an endless saw blade as the cutting tool.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y. *See adv. page 91.*
Atlantic Works Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes Tool Co., New Haven, Conn.
Bentel & Margedant Co., Hamilton, O.
Clark Bros., Belmont, N. Y.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee,Wis.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gardner Machine Works, Gardner, Mass.
Garland, M., Co., Bay City, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
McDonough Mfg. Co., Eau Claire, Wis.
Mershon, Wm. B., & Co., Saginaw, Mich.
Pryibil, P., 512 West 41st St., New York.
Saginaw Mfg. Co., Saginaw, Mich.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Sinker-Davis Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
White, John A., Co., Dover, N. H.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

RE-SAWS, continued.

394 **Circular.** See 391, Re-Sawing Machines.

395 **RIPPERS, GANG.** See also 298, Gang Edgers.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Garland, M., Co., Bay City, Mich.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Standard Saw Mill Machinery Co., Erie, Pa.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

396 **RIP-SAW MACHINES.** See 435, Slitting Saw Machines.

397 **Bevel and Mitre.** For straight, bevel or angle ripping.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Barnes Tool Co., New Haven, Conn.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Gardner Machine Works, Gardner, Mass.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

398 **Double Revolving.** Having two saws, rip and cross-cut, either of which can be brought into operation.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Beach, H. W., Montrose, Pa.

RIP-SAW MACHINES, DOUBLE REVOLVING, continued

Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.

399 **Gang.** For ripping planks and boards into strips, preparatory to other operations.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chattanooga Machinery Co., Chattanooga, Tenn.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago, St., Buffalo, N. Y.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.

400 **Iron Frame.** See 435, Slitting Saw Machines.

401 **Self-Feed.** Having a self-feed appliance.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Garland, M., Bay City, Mich.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 93.*
Mershon, W. B., & Co., Saginaw, Mich.
Michels, J., Machine Works, Detroit, Mich.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Ross, Josiah, Buffalo, N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

RIP-SAW MACHINES, SELF-FEED, continued.

Sinker-Davis Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, Ohio
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

402 **Variable Feed.** Having variable speed to feeding device.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Salem Iron Works, Salem, N. C.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.

403 **RIPPING AND STRAIGHTENING MACHINES.** For sawing lumber and producing straight boards of uniform width and practically straight edges.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.

404 **RIP-SAW TABLES.** See 422, Circular Saw Machines.

405 **ROD, PIN AND DOWEL MACHINES.** Having a revolving hollow cutter head for making rods and dowels.

American Wood Working Machy. Co., 136 Liberty St., N. Y *See adv. page 91.*
Baker Bros., Toledo, O.
Bentel & Margedant Co., Hamilton, O.
Buss Machinery Co., Muskegon, Mich.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., Cincinnati, O.
Cowdrey, C. H., Machine Works, Fitchburg, Mass. *See adv. page 100.*
Crescent Machine Works, Grand Rapids, Mich.
Defiance Machine Works, Defiance, Ohio.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gardner Machine Works, Gardner, Mass.
Goodspeed Machine Co., Winchendon, Mass.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hobbs Mfg. Co., Worcester, Mass.

ROD, PIN AND DOWEL MACHINES, continued

Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Merritt Mfg. Co., Lockport, N. Y.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Trevor Mfg. Co., Lockport, N. Y.
Winkley Co., Hartford, Conn.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

406 **SANDERS, MOULDING.** For finishing or smoothing uneven surfaces of mouldings, casings, bases, etc.

Almond, Joseph E., Montpelier, Vt.
Austin & Eddy, 115 Broad St., Boston, Mass.
Black Bros. Machinery Co., Mendota, Ill.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

407 **SANDING MACHINES, BELT.** A driven sand belt used in sand papering material held in the hands or in clamps.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bein, E. J., 199 High St., Newark, N. J. *See adv. page 98.*
Bentel & Margedant Co., Hamilton, O.
Black Bros. Machinery Co., Mendota, Ill.
Capital City Machine Works, Columbus, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Kane & Roach, Syracuse, N. Y.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.
Pringle & Brodie Machinery Co., 277 S. Canal St., Chicago, Ill.
Smith, Philip, Sidney, O.
Smith, H. B., Machine Co., Smithville, N. J.
Trevor Mfg. Co., Lockport, N. Y.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

408 **SAND PAPERING MACHINES.** For sand papering for all purposes.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
Dennis Machine Co., Jackson, Mich.
Driver, C. H., 1404 16th St., Racine, Wis.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.

SAND PAPERING MACHINES, continued.

Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gardner Machine Works, Gardner, Mass.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Moore Carving Macine Co., Minneapolis, Minn.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.
Ober Mfg. Co., Cragrin Falls, Ohio.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.
See adv. page 99.

409 SASH, DOOR AND BLIND MACHINERY.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Heald Machine Co., Worcester, Mass.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Lane Mfg. Co., Montpelier, Vt.
McDonough Mfg. Co., Eau Claire, Wis.
Mershon, W. B., & Co., Saginaw, Mich.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Seymour & Whitlock, Newark, N. J.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.
See adv. page 99.

410 SASH ROD MACHINES. For cutting the sash rods for window frames.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Smith, H. B., Machine Co., Smithville, N. J.

411 SAW ARBORS. See 351, Mandrels, Circular Saw.

412 SAW BENCHES. On which the material to be sawed is held.

American Seeding Machine Co., Springfield, Ohio.
American Steam Pump Co., Battle Creek, Mich.
American Wood Working Machy. Co., 136 Liberty St., N. Y.

SAW BENCHES, continued.

Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baker Bros., Toledo, Ohio.
Barnes Tool Co., New Haven, Conn.
Baxter Machine Co., Lebanon, N. H.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Carey, W. W., Lowell, Mass.
Challenge Wind Mill & Feed Mill Co., Batavia, Ill.
Chase Turbine Mfg. Co., Orange, Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Covel Mfg. Co., 8 So. Canal St., Chicago, Ill.
Cowdrey, C. H., Machine Works, Fitchburg, Mass. *See adv. page 100.*
Crescent Machine Co., Leetonia, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Dennis Machine Co., Jackson, Mich.
Dodds, Alex., Grand Rapids, Mich.
Fairbanks Co., Cor. Elm and Broome Sts., N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gardner Machine Works, Gardner, Mass.
Goodspeed Machine Co., Winchendon, Mass.
Grammes, L. F. & Sons, Allentown, Pa.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hermance Machine Co., Williamsport, Pa.
Hildreth Bros., Harvard, Mass.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Kidder, R. E., 35 Hermon St., Worcester, Mass.
Lane Mfg. Co., Montpelier, Vt.
Lovel Machine Works, Fitchburg, Mass.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Royle, John, & Sons, Paterson, N. J.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Standard Saw Mill Machinery Co., Erie, Pa.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
White, John A., Co., Dover, N. H.
Whitney, Baxter D., & Son, Winchendon, Mass.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan, Wood Working Machine Co., St. Louis, Mo.

413 **Cord Wood.** For holding cord wood while being sawed.
American Seeding Machine Co., Springfield, Ohio.

SAW BENCHES, CORD WOOD, continued

Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
De Loach Mill Mfg. Co., Atlanta, Ga.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Lovell Machine Works, Fitchburg, Mass.
Luther, B. G., & Co., Worcester, Mass.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.

414 **Cut-Off.** For cutting off for all purposes.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baxter Machine Co., Lebanon, N. H.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Defiance Machine Works, Defiance, Ohio.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dodds, Alexander, Grand Rapids, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Grammes, L. F., & Sons, Allentown, Pa.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hermance Machine Co., Williamsport, Pa.
Holmes, E. &. B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Lovell Machine Works, Fitchburg, Mass.
Luther, B. G., & Co., Worcester, Mass.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Robinson & Co., Richmond, Ind.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

415 **Universal.** For ripping and cross cutting, dadoing, mitering, etc.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baker Bros., Toledo, O.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.

SAW BENCHES, UNIVERSAL, continued

Berlin Machine Works, Beloit, Wis.
Colburn Machine Tool Co., Franklin, Pa.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Dennis Machine Co., Jackson, Mich.
Dodds, Alex, Grand Rapids, Mich.
Elliot & Stutzman, Williamsport, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Greenlee Bros., & Co., 225 W. 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Kidder, R. E., 35 Hermon St., Worcester, Mass.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York. *See adv page 88.*
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
White, John A., Co., Dover, N. H.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

416 **SAW FITTING MACHINES.** For fitting band, gang or circular saws.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.

417 **SAW MACHINES.**

418 **Band.** Having an endless saw blade as the cutting tool.

American Wood Working Machy. Co., 136 Liberty St., N. Y. *See adv. page 91.*
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes Tool Co., New Haven, Conn.
Baxter Machine Co., Lebanon, N. H. *See adv. page 89.*
Bentel & Margedant Co., Hamilton, O.
Carey, W. W., Lowell, Mass.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fisher & Davis, St. Louis, Mo.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gardner Machine Works, Gardner, Mass.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.

SAW MACHINES, BAND, continued.

Hendy, Joshua, Machine Works, San Francisco, Cal.
Hobbs Mfg. Co., Worcester, Mass.
Hodgkins, C. & A., Co., Marlboro, N. H.
Indiana Machine Works Co., Fort Wayne, Ind.
Luther, B. G., & Co., Worcester, Mass.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 93.*
Mershon, W. B., & Co., Saginaw, Mich.
Oliver Machinery Co., Grand Rapids, Mich.
Pacific Saw Mfg. Co., San Francisco, Cal.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Ross, Josiah, Buffalo, N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Silver Mfg. Co., Salem, O.
Sinker-Davis Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Smith, Myers & Schnier, 621 W. Front St., Cincinnati, O.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
West Side Iron Works, Grand Rapids, Mich.
White, John A., Co., Dover, N. H.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.
Wright, Chas. E., Co., New Orange, N. J.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo. *See adv. page 99.*

419 **Blocking.** See 337, Handle Lathes.

420 **Bolting.** For cutting lath or other material to thickness.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Garland, M., Bay City, Mich.
Goodspeed Machine Co., Winchendon, Mass.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. &. B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Klotz Machine Co., Sandusky, O.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Mecklenburg Iron Works, Charlotte, N. C.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Smith, Philip, Sidney, O.
Smith, H. B., Machine Co., Smithville, N. J.
Stearns Mfg. Co., Erie, Pa.
Wickes Bros., Saginaw, Mich.

421 **Cabinet Makers'.** For slitting material and for cross cutting.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Baker, Bros., Toledo, Ohio.

SAW MACHINES, CABINET MAKERS', continued.

Barnes Tool Co., New Haven, Conn.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Chattanooga Machinery Co., Chattanooga, Tenn.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
De Loach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Grammes, L. F., Sons, Allentown, Pa.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York. *See adv page 88.*
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

422 **Circular.** Having circular saw blades for the cutting tools.

American Seeding Machine Co., Springfield, Ohio.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bangor Foundry & Machine Co., Bangor, Me.
Barnes Tool Co., New Haven, Conn.
Barnes, W. F., & John, Co., Rockford, Ill. *See adv. page 93.*
Beach, H. W., Montrose. Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chattanooga Machinery Co., Chattanooga, Tenn.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Crescent Machine Co., Leetonia, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Duplex Mfg. Co., South Superior, Wis.
Eddy, W., Plow Co., Greenwich, N. Y.
Elgin Wind Power & Pump Co., Elgin, Ill.
Ellis Keystone Agricultural Works, Pottstown, Pa.
Empire Agricultural Works, Cobleskill, N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Farquhar, A. B., Co., Ltd., York, Pa.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Grammes, L. F., & Sons, Allentown, Pa.
Gray's, A. W., Sons, Middletown Springs, Vt.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.

SAW MACHINES, CIRCULAR, continued.

Ham, L. M., & Co., 152 Portland St., Boston, Mass.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. &. B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Marseilles Mfg. Co., Marseilles, Ill.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 93.*
Massachusetts Saw Works, Springfield, Mass.
Mecklenburg Iron Works, Charlotte, N. C.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Robinson & Co., Richmond, Ind.
Ross, E. W., Co., Springfield, Ohio.
St. Albans Foundry Co., St. Albans, Vt.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Smalley Mfg. Co., Manitowoc, Wis.
Smith, Philip, Sidney, O.
Smith, H. B., Machine Co., Smithville, N. J.
Star Mfg. Co., Carpentersville, Ill.
Stearns Mfg. Co., Erie, Pa.
Stover Mfg. Co., Freeport, Ill.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O. *See adv. page 85.*
Trevor Mfg. Co., Lockport, N. Y.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.
White, John A., Co., Dover, N. H.
Whitman Agricultural Co., St. Louis, Mo.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*

423 **Cross Cut.** See 424, Cut-Off Machines.

424 **Cut-Off.** For cutting off material.

Adams, W. T., Machine Co., Corinth, Miss.
American Seeding Machine Co., Springfield, Ohio.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes Tool Co., New Haven, Conn.
Butterworth & Lowe, Grand Rapids, Mich.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chandler & Taylor Co., Indianapolis, Ind.
Chase Turbine Mfg. Co., Orange Mass.
Chattanooga Machinery Co., Chattanooga, Tenn.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Cowdrey, C. H., Machine Works, Fitchburg, Mass
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Curtis & Co., Mfg. Co., St. Louis, Mo.

SAW MACHINES, CUT-OFF, continued.

Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Ewart, Samuel F., Pittsburg, Pa.
Farquhar, A. B., Co., Ltd., York, Pa.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Fischer Machine Works, 345 S. Canal St., Chicago, Ill.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Garland, M., Co., Bay City, Mich.
Grammes, L. F. & Sons, Allentown, Pa.
Gray's, A. W., Sons, Middletown Springs, Vt.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. &. B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Lane Mfg. Co., Montpelier, Vt.
Larzelere Machine Co., Williamsport, Pa.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Mecklenburg Iron Works, Charlotte, N. C.
Messinger Mfg. Co., Tatamy, Pa.
Nash, J. M., 131 Ferry St., Milwaukee, Wis.
Novelty Iron Works, Dubuque, Ia.
Perkins & Co., Grand Rapids, Mich.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Robinson & Co., Richmond, Va.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Smith, Philip, Sidney, O.
Smith, H. B., Machine Co., Smithville, N. J.
Stearns Mfg. Co., Erie, Pa.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O. *See adv. page 85.*
Trevor Mfg. Co., Lockport, N. Y.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

425 **Dimension.** For cutting to a dimension.

Lane Mfg. Co., Montpelier, Vt.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Trevor Mfg. Co., Lockport, N. Y.
Whitney, Baxter D., & Son, Winchendon, Mass.

426 **Double Band.** Carrying two endless bands or blades.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance, O.
Smith, H. B., Machine Co., Smithville, N. J.
Union Iron Works, Minneapolis, Minn.

SAW MACHINES, DOUBLE BAND, continued

427 **Drag.** See 202, Drag Saw Mills.

428 **Edging.** For cutting the edges of planks or boards.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Baxter Machine Co., Lebanon, N. H.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
Cordesman Machine Co., Cincinnati, O.
Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gordon Hollow Blast Grate Co., Greenville, Mich.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. &. B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt.
Luther, B. G., & Co., Worcester, Mass.
Mecklenburg Iron Works, Charlotte, N. C.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Robinson & Co., Richmond, Ind.
Sinker-Davis Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
Union Iron Works, Minneapolis, Minn.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.

429 **Foot Power Band.** Operated by foot power.

Barnes Tool Co., New Haven, Conn.
Crescent Machine Co., Leetonia, O.
Fisher & Davis, St. Louis, Mo.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 93.*
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.

430 **Foot Power Circular.**

Barnes, W. F., & John Co., Rockford, Ill.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass. *See adv. page 93.*
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

431 **Hand and Foot Power.** Operated by hand or foot power.

Barnes, W. F., & John Co., Rockford, Ill.
Barnes Tool Co., New Haven, Conn.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

432 **Scroll, Amateur.** For sawing scrolls, usually run by foot power.

Barnes, W. F., & John Co., Rockford, Ill.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa.

SAW MACHINES, SCROLL, continued

Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Trump Bros. Machine Co., Wilmington, Del.

433 **Scroll and Jig.** For cutting scrolls and also for inside work.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes Tool Co., New Haven, Conn.
Barnes, W. F., & John Co., Rockford, Ill. *See adv. page 93.*
Barry, W. B., Saw & Supply Co., Indianapolis, Ind.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Buss Machinery Co., Muskegon, Mich.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
See adv. pages 77, 78, 79, 80.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Machanic St., Buffalo, N. Y.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Griffin, G. W., & Co., Franklin Falls, N. H.
Hall & Brown Wood Working Machine, Co., St. Louis, Mo.
Hobbs Mfg. Co., Worcester, Mass.
Millers Falls Co., Millers Falls, Mass.
Pryibil, P., 512 West 41st St., New York.
Ross, Josiah, Buffalo, N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Seymour & Whitlock, Newark, N. J.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Trump Bros. Machine Co., Wilmington, Del.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

434 **Shaping.** See 337, Handle Lathes.

435 **Slitting.** For cutting material into strips.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Barnes Tool Co., New Haven, Conn.
Barnes, W. F., & John Co., Rockford, Ill.
Baxter Machine Co., Lebanon, N. H.
Beach, H. W., Montrose, Pa.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Chattanooga Machinery Co., Chattanooga, Tenn.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Gardner Machine Works, Gardner, Mass.

SAW MACHINES, SLITTING, continued.

Garland, M., Bay City, Mich.
Grammes, L. F. & Sons, Allentown, Pa.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Greenlee Bros., & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Heald Machine Co., Worcester, Mass.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y. *See adv. page 83.*
Klotz Machine Co., Sandusky, O.
Lane Mfg. Co., Montpelier, Vt.
Lovell Machine Works, Fitchburg, Mass.
Luther, B. G., & Co., Worcester, Mass.
Marston, J. M., & Co., 226 Ruggles St., Boston, Mass.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Robinson & Co., Richmond, Ind.
Ross, Josiah, Buffalo, N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Sinker-Davis Co., Indianapolis, Ind.
Smith, Philip, Sidney, O.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
White, John A., Co., Dover, N. H.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.
Wright, L., Machine Works, Newark, N. J.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

436 **Splitting.** See 435, Slitting Machines.

437 **Swing, Cut-Off.** In which the frame swings as a pendulum either from overhead or below the floor, or from a wall.

Adams, W. T., Machine Co., Corinth, Miss.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Seeding Machine Co., Springfield, Ohio.
American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baxter Machine Co., Lebanon, N. H. *See adv. page 89.*
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Berlin Machine Works, Beloit, Wis.
Chandler & Taylor Co., Indianapolis, Ind.
Chattanooga Machinery Co., Chattanooga, Tenn.
Clark Bros., Belmont, N. Y.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Cowdrey, C. H., Machine Works, Fitchburg, Mass
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Curtis & Co., Mfg. Co., St. Louis, Mo.
Defiance Machine Works, Defiance, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dennis Machine Co., Jackson, Mich.
Dodds, Alexander, Grand Rapids, Mich.
Farwell, F. E., Fitchburg, Mass.

SAW MACHINES, SWING, CUT-OFF, continued.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Filer & Stowell Co., Ltd., Milwaukee, Wis.
Fischer Machine Works, 345 So. Canal St., Chicago, Ill.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Greaves, Klusman & Co., Cook & Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Heilman Machine Works, Evansville, Ind.
Hobbs Mfg. Co., Worcester, Mass.
Holmes, E. & B., Machinery Co., 59 Chicago St., Buffalo, N. Y.
Howell, R. R., & Co., Minneapolis, Minn.
Kingsland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Knight Mfg. Co., Canton, O.
Lane Mfg. Co., Montpelier, Vt. *See adv. pages 96, 97.*
Larzelere Machine Co., Williamsport, Pa.
Luther, B. G., & Co., Worcester, Mass. *See adv. pages 94, 95.*
Nevin & Wetmore Iron Works, Lowville, N. Y.
Perkins & Co., Grand Rapids, Mich.
Power, L., & Co., 20 S. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Randle Machinery Co., 206 Water St., Cincinnati, O.
Robinson & Co., Richmond, Ind.
Rockwood Mfg. Co., Indianapolis, Ind.
Ross, Josiah, Buffalo, N. Y.
Smith, H. B., Machine Co., Smithville, N. J.
Standard Saw Mill Machinery Co., Erie, Pa.
Stearns Mfg. Co., Erie, Pa.
Tidey, M. B., 86 Warren St., Newark, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
See adv. page 85.
Union Iron Works, Minneapolis, Minn.
United States Wind Engine & Pump Co., Batavia, Ill.
Wheland's Machine Works, Chattanooga, Tenn.
White, John A., Co., Dover, N. H.
Wickes Bros., Saginaw, Mich.
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

438 **Swing, Parallel, Cut-off.** Swing saws so arranged as to cut off in a line parallel with the table top.

Connell & Dengler Machine Co., Rochester, N. Y.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Dennis Machine Co., Jackson, Mich.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Luther, B. G., & Co., Worcester, Mass.
Pryibil, P., 512 West 41st St., New York.
Towsley, John T., Mfg. Co., Evans and Gest Sts., Cincinnati, O.
West Side Iron Works, Grand Rapids, Mich.

439 **SAW AND DADO MACHINES.** For rippping, cross cutting, dadoing or grooving.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baker Bros., Toledo, O.
Barnes Tool Co., New Haven Conn.
Beach, H. W., Montrose, Pa.

SAW AND DADO MACHINES, continued.

Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Connell & Dengler Machine Co., Rochester, N. Y.
Cordesman Machine Co., Cincinnati, O.
Crescent Machine Co., Leetonia, O.
Dennis Machine Co., Jackson, Mich.
Elliott & Stutzman, Williamsport, Pa.
Fay, J. A., Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Grammes, L. F., & Sons, Allentown, Pa.
Greaves, Klusman & Co., Cook and Alfred Sts., Cincinnati, O.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Heald Machine Co., Worcester, Mass.
Hermance Machine Co., Williamsport, Pa.
Hobbs Mfg. Co., Worcester, Mass.
Kidder, R. E., 35 Hermon St., Worcester, Mass.
Luther, B. G., & Co., Worcester, Mass.
Ohio Brass Co., Mansfield, Ohio.
Power, L., & Co., 20 South 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York. *See adv page 88.*
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 81.*
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J. *See adv. page 84.*
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Woods, S. A., Machine Co., South Boston, Mass. *See adv. page 92.*
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

440 **SAW SETTING AND FILING MACHINES.** For filing and setting saws on band saw machines.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23 and Arch Sts., Philadelphia, Pa.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Bentel & Margedant Co., Hamilton, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Creswell & Waters Co., Nicetown, Philadelphia, Pa.
Detrick & Harvey Machine Co., Baltimore, Md.
Defiance Machine Works, Defiance, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Garden City Fan Co., 42 So. Clinton St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
New Britain Machine Co., New Britain, Conn. *See adv. page 86.*
Pryibil, P., 512 West 41st St., New York.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Wheland's Machine Works, Chattanooga, Tenn.

441 **SCRAPING MACHINES, WOOD.** For finishing plain wood surfaces.

Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Whitney, Baxter D., & Son, Winchendon, Mass.

442 **SHAPERS.** See 372, Moulding and Shaping Machine, Edge.

SHAPERS, continued.

443 **Foot Power.** Operated by foot.

Barnes, W. F., & John Co., Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

444 **SHAPER CUTTER HEADS.** See also 327, Jointer Heads, and 355, Matcher Heads.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Barnes, W. F. & John, Co., Rockford, Ill.
Bentel & Margedant Co., Hamilton, O.
Berlin Machine Works, Beloit, Wis.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Defiance Machine Works, Defiance, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Moshannon Mfg. Co., Philipsburg, Pa.
Orum, M. L., 503 N. 11th St., Philadelphia, Pa.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Shimer, Samuel J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O
Woods, S. A., Machine Co., South Boston, Mass.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo

445 **SPINDLE MACHINES, CARVING.** See 278, Carving Machines.

446 **SURFACING AND POLISHING MACHINES, DOOR.** For surfacing and polishing doors.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Berlin Machine Works, Beloit, Wis.
Smith, H. B., Machine Co., Smithville, N. J.

447 **TABLE LEG MACHINES.** For making table legs.

Bentel & Margedant Co., Hamilton, O.
Defiance Machine Works, Defiance. Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Merritt Mfg. Co., Lockport, N. Y.
Shawver Co., Springfield, O.

447A **STIPPLING OR STENCILING MACHINES.** For stippling the ground work of carved panels.

Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, Ohio.

448 **TENONING MACHINES.** For cutting tenons in timber ends.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Berlin Machine Works, Beloit, Wis.
Colladay, Jos. O., 626 Race St., Philadelphia, Pa.
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Defiance Machine Works, Defiance, O.

TENONING MACHINES, continued.

Dutchess Tool Co., Fishkill-on-Hudson, N. Y.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Frank Machinery Co., 50-54 Mechanic St., Buffalo, N. Y.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Hobbs Mfg. Co., Worcester, Mass.
Power, L., & Co., 20 So. 23d St., Philadelphia, Pa.
Pryibil, P., 512 West 41st St., New York.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

449 **Car.** For tenoning heavy timber as in car construction, bridge and ship building.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Bentel & Margedant Co., Hamilton, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Garden City Fan Co., 42 So. Clinton St., Chicago, Ill.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hobbs Mfg. Co., Worcester, Mass.
Smith, H. B., Machine Co., Smithville, N. J.

450 **Double End.** For cutting tenons on both ends of timber at the same time.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Gardner Machine Works, Gardner, Mass.
Hayes, E. B., Machine Co., Oshkosh, Wis.
Smith, H. B., Machine Co., Smithville, N. J.

451 **Hand.** For tenoning by hand.

Barnes, W. F. & John, Co., Rockford, Ill. *See adv. page 93.*
Smith, H. B., Machine Co., Smithville, N. J.

452 **Spoke.** See 256, Tenoning Machines, Spoke.

453 **TONGUING AND GROOVING MACHINES.** See 387, Planers and Matchers.

454 **UNIVERSAL WOOD WORKERS.** For all general purposes in wood working.

Atlantic Works, Inc., 23d and Arch Sts., Philadelphia, Pa.
Baker Bros., Toledo, O.
Bentel & Margedant Co., Hamilton, O. *See adv. page 87.*
Cordesman Machine Co., Cincinnati, O.
Cordesman, Meyer & Co., 21 Central Ave., Cincinnati, Ohio.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Greenlee Bros. & Co., 225 West 12th St., Chicago, Ill.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Smith, H. B., Machine Co., Smithville, N. J.
Tidey, M. B., 86 Warren St., Newark, N. J.

UNIVERSAL WOOD WORKERS, continued

Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

455 **VENEER MACHINES.**

456 **Clipping.** For cutting veneer into dimensions.

Capital Machine Works, Indianapolis, Ind.
Coe Mfg. Co., Painesville, O.
Merritt Mfg. Co., Lockport, N. Y.
Trevor Mfg. Co., Lockport, N. Y.
White-Blakeslee Mfg. Co., Birmingham, Ala.
Williamsport Clutch and Pulley Co., Williamsport, Pa.

457 **Cutting.** For cutting veneer from logs.

Capital Machine Works, Indianapolis, Ind.
Coe Mfg. Co., Painesville, O.
Crowell Clutch & Pulley Co., Westfield, N. Y.
Du Quoin Iron Works, Du Quoin, Ill.
Farrel Foundry & Machine Co., Ansonia, Conn.
Hubbard's, Norman, Sons, 265 Water St., Brooklyn, N. Y.
Leitelt, Adolph, Iron Works, Grand Rapids, Mich.
Merritt Mfg. Co., Lockport, N. Y.
Michigan Iron Works, Grand Rapids, Mich.
Smith, Myers & Schnier Co., 621 W. Front St., Cincinnati, O.
Trevor Mfg. Co., Lockport, N. Y.
White-Blakeslee Mfg. C., Birmingham, Ala.
Williamsport Clutch and Pulley Co., Williamsport, Pa.

458 **Drying.** For drying veneer.

Coe Mfg. Co., Painesville, O.
Nichols Dryer Co., Cincinnati, O.

459 **Presses.** For veneering stock.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Bentel & Margedant Co., Hamilton, O.
Black Bros. Machinery Co., Mendota, Ill.
Boomer & Boschert Press Co., Syracuse, N. Y.
Bushnell Press Co., Thompsonville, Conn.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Francis, C. E., & Bro., 423 E. 8th St., Cincinnati, O.
Kline, Lewis T., Alpena, Mich.
Michigan Iron Works, Grand Rapids, Mich.
Nichols Dryer Co., Cincinnati, O.
Smith, H. B., Machine Co., Smithville, N. J.
Towsley, John T., Mfg. Co., Evans & Gest Sts., Cincinnati, O.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.

460 **WIRING MACHINES, BLIND.** For forming and attaching the wires connecting rods and slats of blinds.

American Wood Working Machy. Co., 136 Liberty St., N. Y.
Cordesman Machine Co., Cincinnati, O.
Cordesman Machine Co., Cincinnati, O.
Fay, J. A., & Egan Co., 329-349 W. Front St., Cincinnati, O.
Seymour & Whitlock, Newark, N. J.
Smith, H. B., Machine Co., Smithville, N. J.

461 **WOOD TRIMMERS.** See 65, Trimming Machines.

SECTION IX

MACHINE TOOLS

METAL WORKING MACHINERY, ETC.

INDEX TO DEPARTMENTS.

	Page
Bicycle Machinery	739
Blacksmiths' Tools and Appliances	741
Bolt and Nut Machinery	743
Foundry Equipment	747
Machine Tools	749
Machine Tool Accessories	786
Machinists' Small Tools	801
Metal Working Machinery	821
Wire Making and Wire Working Machines and Tools	850

MANUFACTURERS OF

MACHINE TOOLS, METAL WORKING MACHINERY, ETC.

Alphabetical Index.

A. & C. Mfg. Co., Cleveland, O.—Tapping Machines.
Abrasive Material Co., S. 72d and Upland Sts., Philadelphia, Pa.—Grinding Wheels.
Acme Machinery Co., Cleveland, O.—Bolt and Nut Machinery, Rivet Machines.
Adams Bros., Providence, R. I.—Lathes, Presses, Rolling Mills.
Adams Co., Dubuque, Ia.—Grinders, Milling Machines, Planers, etc.
Adriance Machine Works, 254 Van Brunt St., Brooklyn, N. Y.—Presses.
Ajax Mfg. Co., Cleveland, O.—Bolt and Nut Machinery, Bulldozers, Rivet Machines, Planers. *See adv. page 45.*
Albree, Chester B., Iron Works, Allegheny, Pa.—Pneumatic Riveters.
Allen, E. F., & Co., Auburn, N. Y.—Tool Grinders.
Allen, John F., 370 Gerard Ave., New York.—Pneumatic Riveters.
Alliance Machine Co., Alliance, O.—Steam Hammers, Punches, Shears.
Almond, T. R., 83 Washington St., Brooklyn, N. Y.—Chucks.
American Ball Co., Providence, R. I.—Steel Balls and Ball Bearings.
American Ball Bearing Co., Cleveland, O.—Ball Bearings.
American Compound Bearing Co., 25 Broad St., New York.—Bearings.
American Emery Wheel Works, Providence, R. I.—Grinding Machines, Emery Wheels.
American Engineering Works, 204 Dearborn St., Chicago, Ill.—Hammers.
American Foundry & Machine Co., Hanover, Pa.—Planers, Pulley Molding Machines.
American Gas Furnace Co., 23 John St., New York.—Brazing Tables, etc. *See adv. page 64.*
American Roller Bearing Co., South Framingham, Mass.—Bearings.
American Screw Co., Providence, R. I.—Taps.
American Steel Tool Co., Chicago, Ill.—File Sharpening Machines.
American Swiss File & Tool Co., Elizabeth, N. J.—Files. *See adv. page 64.*
American Tool & Machine Co., 109 Beach St., Boston, Mass.—Grinders, Lathes, Milling Machines.
American Tool Works Co., Cincinnati, O.—Lathes, Planers, Drills, Shapers.
American Turret Lathe Mfg. Co., Warren, Pa.—Automatic Chucking Machines, Lathes.

American Twist Drill Co., Laconia, N. H.—Grinders, Twist Drills.
American Watch Tool Co., Waltham, Mass.—Drills, Grinders, Lathes.
Ames, B. C., & Co., Waltham, Mass.—Lathes, Automatic Screw Machines.
Ams, Max, Machine Co., 372 Greenwich St., New York.—Can Making Machinery.
Anchor Machine Works, Grand Rapids, Mich.—Grinders.
Anderson Tool Co., Anderson, Ind.—Grinders.
Anderson, W. H., & Sons, Inc., Detroit, Mich.—Heavy Machine Tools, Punches, etc.
Andrew, M. L., & Co., 118 W. 2d St., Cincinnati, O.—Drills.
Arcade Mfg. Co., Freeport, Ill.—Molding Machines.
Ardrey, S. B., & Sons, Bristol, Pa.—Chucks.
Arguto Oilless Bearing Co., Wayne Junction, Philda., Pa.—Bearings.
Armstrong Bros., Tool Co., 617 Austin Ave., Chicago, Ill.—Cutting Off Machines, Cutting Tools, Lathe Dogs. *See adv. page 68.*
Armstrong Mfg. Co., Bridgeport, Conn.—Chucks, Taps, Pipe Cutting and Threading Machines, etc. *See adv. page 74.*
Atha Tool Co., Newark, N. J.—Blacksmiths' Tools.
Athol Machine Co., Athol, Mass.—Machinists' Small Tools, Wire Working Machinery.
Atkins, E. C., & Co., Indianapolis, Ind.—Hack Saws, Saw Blades.
Atlantic Grindstone Co., Providence, R. I.—Grindstones.
Atlas Machine Co., Providence, R. I.—Tap Removers, Machinists' Vises.
Atlas Machine Tool & Die Works, Cincinnati, O.—Drills, Tapping Machines.
Atlas Pipe Wrench Co., 110 Liberty St., New York.—Pipe Wrenches.
Auburn Ball Bearing Co., Auburn, N. Y.—Bearings.
Auburn Ball Bearing Co., Rochester, N. Y.—Bearings.
Aurora Tool Works, Aurora, Ind.—Drills, Milling Machines.
Automatic Machine Co., Bridgeport, Conn.—Lathes, Automatic Screw Machines, Presses, etc.
Automatic Machine Co., Greenfield, Mass.—Grinders, Lathes, Automatic Screw Machines, etc. *See adv. page 5.*
Badger State Machine Co., Janesville, Wis.—Punches and Shears.
Baer, A. J., Shoenersville, Pa.—Hoof Cutters.
Bailey-Farrell Mfg. Co., Pittsburg, Pa.—Pipe Tapping Machines.
Baird Machine Co., Oakville, Conn.—Tumblers.
Baker Bros., Toledo, O.—Drilling, Keyseating and Slotting Machines.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.—Emery Wheel Dressers.
Ball Bearing Co., Merion & Girard Aves., Philadelphia, Pa.—Ball Bearings.
Ball Mfg. Co., Stamford, Conn.—Crank Pin Grinders.
Bantam Mfg. Co., Bantam, Conn.—Ball Bearings.
Barbour-Stockwell Co., Cambridgeport, Mass.—Sand Mixers.
Bardons & Oliver, Cleveland, O.—Grinders, Lathes.
Barker, Wm., & Co., 6th & Eggleston Sts., Cincinnati, O.—Grinders, Lathes, Scrapers.
Barnard & Leas Mfg. Co., Moline, Ill.—Separators.
Barnes, B. F., Co., Rockford, Ill.—Drills, Grinders, Lathes.
Barnes Tool Co., New Haven, Conn.—Monkey Wrenches, Pipe Tongs, Pipe Cutters.
Barnes, W. F., & John Co., Rockford, Ill.—Drilling and Grinding Machines, Lathes, etc. *See adv. page 26.*
Barnett, G. & H., Co., 21 Richmond St., Philadelphia, Pa.—Rasps, Files.
Barnett, Oscar, Foundry Co., Newark, N. J.—Flasks.
Barr, H. G., Worcester, Mass.—Drilling and Grinding Machines. *See adv. page 6.*

Bartlett, E. E., 364 Atlantic Ave., Boston, Mass.—Arbor Presses, Planers, Chucks. *See adv. page 18.*
Bates Machine Co., Joliet, Ill.—Wire Working Machinery.
Baush Mch. Tool Co., Springfield, Mass.—Bolt and Nut Mchy., Boring and Turning Mills, etc. *See adv. page 12.*
Bayldon Machine & Tool Co., Jersey City, N. J.—Grinders, Chucks, Box Tools.
Bay State Stamping Co., Worcester, Mass.—Oil Hole Cups and Covers, Emery Wheel Dressers.
Bay State Tap & Die Co., Mansfield, Mass.—Taps, Pipe Dies.
Beaman & Smith Co., Providence, R. I.—Boring, Drilling & Milling Machines, etc.
Beaudry & Co., 147 Milk St., Boston, Mass.—Hammers, Presses, Pneumatic Punches.
Becker, August, 247 Atlantic Ave., Boston, Mass.—Name Plates.
Becker-Brainard Milling Mch. Co., Hyde Park, Mass.—Gear Cutting, Grinding and Milling Machines, etc. *See adv. page 29.*
Belden Machine Co., New Haven, Conn.—Pipe Wrenches, Pipe Cutting and Threading Machines.
Bell, David, Engineering Works, Buffalo, N. Y.—Steam Hammers.
Belmer Machine Tool Co., Cincinnati, O.—Planers.
Bemis & Call Hardware & Tool Co., Springfield, Mass.—Wrenches.
Bertsch & Co., Cambridge City, Ind.—Shearing, Plate Bending and Crimping Machines and Presses.
Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.—Grinding Machines, Hand Reamers, Buffing and Polishing Machines.
Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.—Hydraulic Bending and Crimping Machines, Presses, etc.
Betts Machine Co., Wilmington, Del.—Boring, Drilling and Screw Slotting Machines, Lathes, etc. *See adv. page 15.*
Bickford Drill & Tool Co., Cincinnati, O.—Drilling Machines, Tool Holders. *See adv. page 25.*
Bickford, H., & Co., Lakeport, N. H.—Boring Machines, Turning Mills. *See adv. page 2.*
Bienenstok, Edgar A., & Co., 715 Locust St., St. Louis, Mo.—Grinders.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.—Grinders, Pipe Cutting and Threading Machines.
Billings & Spencer Co., Hartford, Conn.—Drills, Gages, Presses, etc. *See adv. page 70.*
Binghamton Machine Tool Works, Binghamton, N. Y.—Centering and Sawing Machines.
Binsse Machine Co., Newark, N. J.—Boring Machines, Leveling Jacks, Jack Screws.
Birmingham Iron Foundry, Derby, Conn.—Rolling Mill Machinery.
Blaisdell, P., & Co., Worcester, Mass.—Drills, Lathes, Planers. *See adv. page 60.*
Blake, George F., Mfg. Co., 114 Liberty St., New York.—Wire Straightening and Molding Machines.
Blake & Johnson, Waterbury, Conn.—Bicycle Mchy., Milling Machines, Presses, etc.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.—Lathes, Milling and Boring Machines, Presses, etc.
Bliss, W. L., South Egremont, Mass.—Hoof Cutters.
Blodgett, G. S., Co., Burlington, Vt.—Core Ovens.
Blount, J. G., & Co., Everett, Mass.—Grinding Machines, Lathes, Chucks, etc. *See adv. page 7.*
Bogue & Crowe, 183 S. Clinton St., Chicago, Ill.—Name Plates.
Bonney Vise & Tool Works, Inc., 3015 Chestnut St., Philadelphia, Pa.—Vises, Pipe Wrenches.

Bonnot Co., Canton, O.—Sand Sifters.
Booth, Lloyd, Co., Youngstown, O.—Lathes.
Borden Co., Warren, O.—Pipe Threading Machines.
Born, J. C., & Bro., Machine Works, Belleville, Ill.—Grinders.
Bosworth, E. B., Warren, R. I.—Lathes.
Bowen Mfg. Co., Auburn, N. Y.—Oil Hole Cups and Covers. *See adv. page 40.*
Boynton & Plummer, Worcester, Mass.—Bolt and Nut Machinery, Drilling Machines, Shapers, etc. *See adv. page 23.*
Braddock Machine & Mfg. Co., Braddock, Pa.—Wire Working Mchy.
Bradford Machine Tool Co., Cincinnati, O.—Lathes, Lathe Attachments. *See adv. page 19.*
Bradley Co., Syracuse, N. Y.—Power Hammers.
Brandywine Machine Co., Wilmington, Del.—Hydraulic Presses.
Bremer Machine & Tool Co., Kalamazoo, Mich.—Milling Machines, Presses, Punches, etc.
Bridgeford, Chas., Rochester, N. Y.—Keyseating Machines, Lathes.
Bridgeport Deox Bronze & Metal Co., Bridgeport, Conn.—Name Plates. *See adv. page 125.*
Bridgeport Mfg. Co., Bridgeport, Conn.—Wire Working Machinery.
Bridgeport Safety Emery Wheel Co., Bridgeport, Conn.—Grinders, Lathes, Emery Wheel Dressers, etc. *See adv. page 32.*
Brown, H. B., & Co., East Hampton, Conn.—Bolt and Nut Machinery, Pipe Dies.
Brown, R. H., & Co., New Haven, Conn.—Chucks.
Brown Specialty Machine Co., 60 W. Jackson Blvd., Chicago, Ill.—Core Making Machines.
Brown & Sharpe Mfg. Co., Providence, R. I.—Boring, Grinding and Milling Machines, Machinists' Small Tools, etc. *See adv. page 11.*
Browning Mfg. Co., Milwaukee, Wis.—Grinders.
Brubaker, W. L., & Bros., Millersburg, Pa.—Screw Plates, Stocks and Dies, Pipe Taps and Reamers.
Bryan Vacuum Moulding Machine Co., Lockport, N. Y.—Molding Machines.
Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.—Track Drills.
Buescher Mfg. Co., Elkhart, Ind.—Drills, Lathes, Presses, etc.
Brock Wrench Mfg. Co., 45 Dey St., New York.—Pipe Wrenches.
Buffalo Dental Mfg. Co., Buffalo, N. Y.—Brazing Tables.
Buffalo Emery Wheel Co., Buffalo, N. Y.—Grinders, Emery Wheels.
Buffalo Excelsior Machine Co., Military Road, Buffalo, N. Y.—Steel Balls.
Buffalo Forge Co., Buffalo, N. Y.—Blacksmiths' Tools, Drilling and Shearing Machines, etc.
Builders Iron Foundry, Providence, R. I.—Grinding Machines, Lathes, Buffing and Polishing Machines, etc.
Bullard Machine Tool Co., Bridgeport, Conn.—Boring Machines, Lathes. *See adv. page 14.*
Bullock, O. W., & Co., Springfield, Mass.—Drills, Gages, Vises.
Bullock, T. H., Bellows & Forge Co., Cleveland, O.—Anvils, Tuyeres.
Bultman, F. H., & Co., 35 W. Centre St., Cleveland, O.—Gear Cutting Machines.
Burke Machinery Co., Cleveland, O.—Sensitive Drills, Tapping Machines.
Burke, P. F., South Boston, Mass.—Blacksmiths' Vises.
Burnham, F. A., Tool Co., Jackson, Mich.—Screw Cutting Lathes.
Burr, John T., & Sons, Kent Ave. & S. 6th St., Brooklyn, N. Y.—Keyseating Machines, Lathes, Milling Machines, etc.
Burr, Wm. H., 108 S. 8th St., Philadelphia, Pa.—Pipe Wrenches.
Burroughs, Charles, Co., Newark, N. J.—Hydraulic Presses.

Butler Chuck Co., Greenfield, Mass.—Chucks.
Butterfield & Co., Derby Line, Vt.—Taps, Reamers, etc. *See adv. page 40.*
Butts & Ordway Co., 190 High St., Boston, Mass.—Tire Shrinkers.
Byan Vacuum Moulding Machine Co., Cleveland, O.—Molding Machines.
Byram & Co., Inc., Detroit, Mich.—Foundry Equipment.
Cady, C. N., Co., Canistota, N. Y.—Grinders.
Calder, Geo. H., Lancaster, Pa.—Emery Wheel Dressers.
Caldwell, E. R., & Co., Braddock, Pa.—Hydraulic Presses.
Capital City Machine Works, Columbus, O.—Lathes, Grinders, Presses.
Carborundum Co., Niagara Falls, N. Y.—Emery Wheels. *See adv. page 68.*
Card, S. W., Mfg. Co., Mansfield, Mass.—Bolt and Nut Mchy. Taps, etc. *See adv. page 49.*
Carlin's, Thos., Sons Co., Allegheny, Pa.—Tuyeres, Shears.
Carpenter, J. M., Tap & Die Co., Pawtuckeet, R. I.—Bolt Dies, Taps, Wrenches, etc.
Carr Bros., Syracuse, N. Y.—Tool Holders, Lathe Tools.
Carroll, A. V., Machine Works, Williamsburg, O.—Lathes.
Carter & Hakes Machine Co., Winstead, Conn.—Milling Machines. Vises.
Carver Cotton Gin Co., East Bridgewater, Mass.—Knife Grinders.
Cavagnaro, John J., 211 Centre St., New York.—Bench Lathes, Wire Weavers.
Central Machine Works, Indianapolis, Ind.—Cylinder Boring Bars.
Century Machine & Mfg. Co., Mansfield, O.—Punches, Shears.
Chadwick, G. B., & Co., Portsmouth, N. H.—Reamers.
Challenge Machine Co., Belmont Ave. & Viola St., Philadelphia, Pa.—Drills and Grinders, Lathes, etc. *See adv. page 33.*
Chambersburg Engineering Co., Chambersburg, Pa.—Hydraulic Bending Machines, Presses, Riveting Machines. *See adv. page 36.*
Champion Blower & Forge Co., Lancaster, Pa.—Blacksmiths' Tools, Post Drills, Taps, etc.
Chandler Co., Ayer, Mass.—Planers.
Chapin-Love Machine Co., New Orange, N. J.—Drills.
Chapin-Stephens Co., Pine Meadow, Conn.—Levels.
Chapman, H. L., Marcellus, Mich.—Grinders, Lathes.
Chattanooga Machinery Co., Chattanooga, Tenn.—Keyseating Machines.
Cheney, Henry, Hammer Co., Little Falls, N. Y.—Blacksmiths' Hammers.
Chicago Flexible Shaft Co., La Salle Ave. & Ontario St., Chicago, Ill.—Drills, Gas Heaters, Countershafts, etc.
Chicago Hardware Mfg. Co., 53 Clark St., Chicago, Ill.—Pipe Wrenches.
Chicago Machine Tool Co., Chicago, Ill.—Countershafts.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.—Pneumatic Hammers, Rammers.
Chicago Screw Co., 2 N. Canal St., Chicago, Ill.—Emery Wheel Dressers.
Chicago Wheel & Mfg. Co., 39-45 W. Randolph St., Chicago, Ill.—Emery Wheels, Emery Wheel Dressers.
Cincinnati Machine Tool Co., Cincinnati, O.—Drills, Vises.
Cincinnati Milling Machine Co., Cincinnati, O.—Grinders and Milling Machines, Vises.
Cincinnati Planer Co., Cincinnati, O.—Planers.
Cincinnati Punch & Shear Works, Cincinnati, O.—Plate Bending Machines, Coping Machines, Punches, etc.
Cincinnati Screw & Tap Co., Cincinnati, O.—Machine Screws.
Cincinnati Shaper Co, Cincinnati, O.—Shapers, Vises.

Cincinnati Tool Co., Cincinnati, O.—Twist Drills, Taps, Machinists' Clamps.
Clark, Jas., Jr., & Co., Louisville, Ky.—Drills, Grinders, Saws.
Clark, W. J., Co., Salem, O.—Machine Shop Furniture.
Clayton & Lambert Mfg. Co., Detroit, Mich.—Gasoline Apparatus.
Cleveland Automatic Machine Co., Cleveland, O.—Bicycle Machinery, Chucking Machines, Lathes.
Cleveland Automatic Molding Machine Co., Cleveland, O.—Molding Machines.
Cleveland Ball & Screw Co., Cleveland, O.—Steel Balls.
Cleveland Planer Co., Cleveland, O.—Planers.
Cleveland Pneumatic Tool Co., 2d Ave., near Penna. R. R., Cleveland, O.—Pneumatic Riveters.
Cleveland Punch & Shear Works Co., Cleveland, O.—Boring, Drilling and Reaming Machines, Presses, etc.
Cleveland Stone Co., Cleveland, O.—Grindstones.
Cleveland Twist Drill Co., Cleveland, O.—Chucks, Twist Drills, Reamers, etc.
Cleveland Wire Spring Co., Cleveland, O.—Machine Shop Furniture.
Clough, R. M., Tolland, Conn.—Milling Machines, Cutters, Reamers.
Clow, James B., & Sons, 344 Franklin St., Chicago, Ill.—Pipe Cutting and Threading Machines.
Clymer Mfg. Co., Indiana, Pa.—Tuyeres.
Cochrane-Bly Machine Works, Rochester, N. Y.—Shapers, Saw Filing Machines, Cold Saw Machines.
Codman, F. L. & J. C., Boston, Mass.—Buffing Wheels.
Coes Wrench Co., Worcester, Mass.—Monkey Wrenches. *See adv. page 46.*
Colburn Machine Tool Co., Franklin, Pa.—Boring and Turning Mills, Shapers, Saw Tables.
Collins Co., Collinsville, Conn.—Blacksmiths' Hammers.
Collis Wood & Metal Mfg. Co., Dubuque, Ia.—Disc Grinders.
Colton, G. D., & Co., Inc., Galesburg, Ill.—Punches and Shears.
Columbus Anvil & Forging Co., Columbus, O.—Blacksmiths' Anvils.
Columbus Forge & Iron Co., Columbus, O.—Blacksmiths' Anvils, Vises.
Columbus Machine Co., Columbus, O.—Bolt and Nut Machinery, Pipe Cutting and Threading Machines.
Columbus Pneumatic Tool Co., Columbus, O.—Pneumatic Drills.
Comstock, Geo. S., Mechanicsburg, Pa.—Blacksmiths' Tools.
Consolidated Press & Tool Co., 96 N. Clinton St., Chicago, Ill.—Presses.
Cook, Asa S., Co., Hartford, Conn.—Bolt and Nut Machinery, Milling Machines, Screw Shaving Machines.
Corbin, P. & F., New Britain, Conn.—Machine Screws.
Costello, J. E., Machine Works, 60 Centre St., New York.—Milling Machines.
Coulter & McKenzie Machine Co., Bridgeport, Conn.—Bending and Straightening Machines, Rolling Mills, etc.
Cox & Sons Co., Bridgeton, N. J.—Pipe Tapping Machines, Pipe Vises, Pipe Cutting and Threading Machines.
Crane Co., 10 N. Jefferson St., Chicago, Ill.—Pipe Vises, Pipe Cutting and Threading Machines.
Crescent Machine Co., Detroit, Mich.—Lathes.
Crompton & Knowles Loom Works, Worcester, Mass.—Wire Weavers.
Cronk & Carrier Mfg. Co., Elmira, N. Y.—Wire Cutting Machines, Pliers.
Cross & Speirs Machine Co., Waterbury, Conn.—Drills, and Tapping Machines, Lathes, Buffing and Polishing Machines.
Crowe Metal Mfg. Co., 71 W. Jackson Blvd., Chicago, Ill.—Name Plates.
Curtin-Hebert Mfg. Co., Gloversville, N. Y.—Emery Wheel Dressers.

Curtis & Curtis Co., Bridgeport, Conn.—Lathe Attachments, Pipe Cutting and Threading Machines, etc. *See adv. page 74.*
Cushman Chuck Co., Hartford, Conn.—Chucks, Faceplates and Jaws. *See adv. page 31.*
Dallett, Thomas H., Co., York St. & Sedgley Ave., Philadelphia, Pa.—Drills, Grinders, Pneumatic Riveting Machines. *See adv. page 37.*
Davenport Machine Works, Davenport, Ia.—Arch Bar Drills.
Davis & Furber Co., North Andover, Mass.—Pulley Lathes.
Davis, W. P., Machine Co., Rochester, N. Y.—Drilling and Keyseating Machines, Lathes, etc.
Dayton Plating Works, Dayton, O.—Name Plates.
Dean, H. C., Machine Co., Fitchburg, Mass.—Grinders, Grinder Heads.
Defiance Machine Works, Defiance, O.—Grinders, Grindstone Frames.
Delano, E. A., 50-56 S. Clinton St., Chicago, Ill.—Pulley Taps, Pulley Molding Machines.
Delivouk & George, 133-137 S. Clinton St., Chicago, Ill.—Plain Power Presses.
Desmond-Stephan Mfg. Co., Urbana, O.—Emery Wheel Dressers.
Detrick & Harvey Machine Co., Baltimore, Md.—Bolt and Nut Machinery, Boring, Drilling and Milling Machines, etc.
Detroit Twist Drill Co., Detroit, Mich.—Twist Drills.
Devlin, Thomas, Mfg. Co., N. 3d St. & Lehigh Ave., Philadelphia, Pa.—Stocks and Dies, Pipe Vises.
Diamond Clamp & Flask Co., Richmond, Ind.—Flasks.
Diamond Drill & Mch. Co., Birdsboro, Pa.—Cold Saw Cutting Off Machines.
Diamond Machine Co., Providence, R. I.—Drills, Grinders, Lathes. *See adv. page 10.*
Diamond Saw & Stamping Works, Buffalo, N. Y.—Hand Hack Saws.
Dickinson, Thos. L., 45 Vesey St., New York.—Diamond Tools. *See adv. page 31.*
Dienelt & Eisenhardt, 1304 N. Howard St., Philadelphia, Pa.—Plain Power Hammers.
Dietz Machine Tool Co., Cincinnati, O.—Screw Cutting Lathes.
Dill, T. C., Machine Co., Mascher & Somerset Sts., Philadelphia, Pa.—Slotting Machines.
Ding's Electro-Magnetic Separator Co., Milwaukee, Wis.—Separators.
Disston, Henry, & Sons, Tacony & N. Front Sts., Philadelphia, Pa.—Files, Band Saw Blades, Wire Gages.
Dixon, Joseph, Crucible Co., Jersey City, N. J.—Crucibles.
Dock, Herman, 905 Carlisle St., Philadelphia, Pa.—Grinders.
Dodge Mfg. Co., Mishawaka, Ind.—Grinders.
Draper Machine Tool Co., Worcester, Mass.—Boring and Drilling Machines, Lathes, Planer Attachments.
Dreses Machine Tool Co., Cincinnati, O.—Drills, Lathes. *See adv. page 26.*
Dudgeon, Richard, 24 Columbia St., New York.—Steam Hammers, Hydraulic Presses.
Duff Machine Co., Lowell, Mass.—Chain Drills.
Dunham Nut Co., Unionville, Conn.—Cold Pressed Nut Machines.
Eagle Anvil Works (Fisher & Norris), Trenton, N. J.—Blacksmiths' Anvils.
Eaton, Cole & Burnham Co., 253 Broadway, New York.—Pipe Vises, Pipe Cutting and Threading Machines.
Eddystone Foundry & Machine Co., Eddystone, Pa.—Pipe and Tube Mill Machinery.
Electric Emery Wheel Co., Newark, N. J.—Grinders, Emery Wheels, Emery Wheel Dressers.
Elm City Engineering Co., New Haven, Conn.—Separators.

Emmert Mfg. Co., Waynesboro, Pa.—Clipping Vises, Jig Planer Vises, Bicycle Vises.
Erie Mfg. & Supply Co., Erie, Pa.—Pipe Vises.
Erlander, J., 172 Centre St., New York.—Milling Cutters, Wire Weavers.
Errington, F. A., 39 Cortlandt St., New York.—Tapping Machine Attachments, Drill Chucks, Drill Holders.
Espen-Lucas Machine Works, Broad & Noble Sts., Philadelphia, Pa.—Boring, Milling and Drilling Machines, Cold Saw Machines.
Etna Mfg. Co., 253 Broadway, New York.—Twist Drills.
Euchenhofer, E. E., Machine Works, Dayton, O.—Power Hack Saws.
Eureka Fence Mfg. Co., Richmond, Ind.—Wire Fence Machines.
Evansville Tool Co., Evansville, Ind.—Blacksmiths' Hammers.
Excelsior Needle Co., Torrington, Conn.—Swaging and Pointing Machines. *See adv. page 38.*
Excelsior Steel Ball Co., Military Road, Buffalo, N. Y.—Steel Balls.
Exeter Machine Works, Exeter, N. H.—Boring, Drilling and Tapping Machines.
Fairbanks Co., cor. Broome & Elm Sts., New York.—Plain Power Hammers, Pipe Cutting and Threading Machines, etc.
Fairbanks Machine Tool Co., Springfield, O.—Lathe, Planer and Shaper Tools.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philadelphia, Pa.—Keyseating, Milling and Notching Machines, Presses, etc.
Faneuil Watch Tool Co., Brighton, Mass.—Bench Lathes, Draw Chucks, Jewelers' Chucks. *See adv. page 53.*
Fay & Scott, Dexter, Me.—Drills, Lathes, Planers, etc.
Federal Mfg. Co., Cleveland, O.—Steel Balls. *See adv. page 50.*
Fellows Gear Shaper Co., Springfield, Vt.—Gear Cutting, Rack Cutting and Gear Shaping Machines.
Fenn-Sadler Machine Co., Hartford, Conn.—Bench Lathes.
Ferracute Machine Co., Bridgeton, N. J.—Spinning Lathes, Presses.
Fischer Foundry & Machine Co., Pittsburg, Pa.—Pipe and Tube Mill Machinery.
Fitchburg File Works, Fitchburg, Mass.—Files, Hand Hack Saws.
Fitchburg Machine Works, Fitchburg, Mass.—Boring and Drilling Machines, Lathes, Shapers, etc.
Flather & Co., Nashua, N. H.—Lathes, Shaping Machines. *See adv. page 21.*
Flather, Mark, Planer Co., Nashua, N. H.—Drills, Planers, Shapers, etc. *See adv. page 22.*
Foos Mfg. Co., Springfield, O.—Blacksmiths' Tools, Drills.
Foote, Burt & Co., Cleveland, O.—Drills, Grinders.
Fosdick Machine Tool Co., Cincinnati, O.—Drilling and Boring Machines, Tapping Machines. *See adv. page 67.*
Foster-Kimball Machine Co., 73-77 Fulton St., Chicago, Ill.—Turret Lathes, Automatic Screw Machines, Cartridge Machinery.
Fox Machine Co., Grand Rapids, Mich.—Boring, Drilling and Milling Machines, Chucks, etc.
Franklin Mfg. Co., New Haven, Conn.—Wire Straighteners.
Fulton Iron & Engine Works, Detroit, Mich.—Tire Benders and Shrinkers.
Fulton Machine Co., Canal Fulton, O.—Countershafts, Drill Vises.
G. & P. Engraving Co., 185 Franklin St., Boston, Mass.—Name Plates. *See adv. page 56.*
Gage Machine Works, Waterford, N. Y.—Brass Workers, Foot and Turret Lathes.
Gallagher Mfg. Co., Lynn, Mass.—Grinders.
Gang, Wm. E., Co., Cincinnati, O.—Radial Drilling Machines.
Gardam, William, & Son, 45 Rose St., New York.—Drills.

Garvin Machine Co., Spring & Varick Sts., New York.—Bicycle Machinery, Drilling and Milling Machines, etc. *See adv. page 28.*
Gates, Fred P., New London, Conn.—Drill Chucks.
Gautier, J. H., & Co., Jersey City, N. J.—Crucibles.
Gay & Ward, Inc., Athol, Mass.—Milling Cutters. *See adv. page 5.*
Geauga Foundry & Mfg. Co., Painesville, O.—Machine Shop Furniture.
General Pneumatic Tool Co., Montour Falls, N. Y.—Riveting Machines.
Geometric Drill Co., New Haven (Westville Sta.), Conn.—Pipe Dies and Die Heads, Reamers, Hollow Milling Tools.
Gilmour, J., 99 Nassau St., New York.—Tumbling Barrels.
Girard Boiler & Mfg. Co., Girard, O.—Foundry Cupolas, etc.
Gisholt Machine Co., Madison, Wis.—Tool Grinders, Turret Lathes.
Gleason, J. M., Hamilton, O.—Wire Fence Machines.
Gleason Works, Rochester, N. Y.—Gear Cutting Machines.
Glen Mfg. Co., Ellwood City, Pa.—Wire Weavers.
Globe Machine & Stamping Co., Cleveland, O.—Drills, Emery Wheel Dressers, Tumblers.
Glover Bros., Frankford, Philadelphia, Pa.—Pipe Bending Machines.
Goddard Machine Co., Holyoke, Mass.—Grinders.
Goodell-Pratt Co., Greenfield, Mass.—Drills, Grinders, Hand Hack Saws.
Goodyear, S. W., Waterbury, Conn.—Rolling Mill Gages, Pointing and Swaging Machines. *See adv. page 38.*
Gould & Eberhardt, Newark, N. J.—Drills, Gear Cutting Machines, Grinders, etc. *See adv. page 24.*
Grabo, E. O., 182 Centre St., New York.—Lathes, Saw Tables. *See adv. page 56.*
Grafton Stone Co., Elyria, O.—Grindstones.
Graham Mfg. Co., Providence, R. I.—Jig Planer Vises.
Grant Mfg. & Machine Co., Bridgeport, Conn.—Grinders, Screw Slotting Machines.
Gray, G. A., Co., Cincinnati, O.—Planers.
Gray & Prior Machine Co., Hartford, Conn.—Universal Joints. *See adv. page 46.*
Greaves, Klusman & Co., Cincinnati, O.—Lathes.
Greenfield Machine Co., Greenfield, Mass.—Grinders.
Griffin, G. W., & Co., Franklin Falls, N. H.—Hand Hack Saws.
Guinn Ball Bearing Co., Baltimore, Md.—Ball Bearings.
Haberle & Graham, South Bend, Ind.—Bolt Cutters.
Gustafson, O., 423 W. 27th St., New York.—Hand Drills.
Hadesty, J. M., Tamaqua, Pa.—Pipe Tapping Machines.
Haeseler-Ingersoll Pneumatic Tool Co., 26 Cortlandt St., New York.—Pneumatic Tools.
Haines Gauge Co., 4th & Chestnut Sts., Philadelphia, Pa.—Micrometer Gages.
Ham, L. M., & Co., 152 Portland St., Boston, Mass.—Sawing Machines.
Hamilton Machine Tool Co., Hamilton, O.—Drills, Lathes, Lathe Attachments.
Hammond, C., & Son, Ogontz, Pa.—Blacksmiths' Hammers.
Hampden Corundum Wheel Co., Springfield, Mass.—Emery Wheels.
Hanna Engineering Works, 820 Elston Ave., Chicago, Ill.—Vises, Sand Sifters.
Hanson & Van Winkle Co., Newark, N. J.—Polishing Lathes, Buffing and Polishing Machines.
Harrington, Edwin, Son, & Co., Inc., 1503 Penna. Ave., Philadelphia, Pa.—Boring and Drilling Machines, Centering Machines, Grinders.
Harris, Samuel, & Co., 23-25 S. Clinton St., Chicago, Ill.—Socket Wrenches.
Harrison & Watson Co., 1708 Ludlow St., Philadelphia, Pa.—Hydraulic Presses, Hydraulic Riveting Machines.

Hart Mfg. Co., Cleveland, O.—Taps, Screw Plates, Pipe Cutting and Threading Machines. *See adv. page 48.*
Hartford Machine Screw Co., Hartford, Conn.—Automatic Screw Machines, Taps, Straightening Machines.
Haskell, Wm. H., Mfg. Co., Pawtucket, R. I.—Machine Screws.
Hawkeye Wrench Co., Marshalltown, Ia.—Pipe Wrenches.
Hay-Budden Mfg. Co., 270 N. Henry St., Brooklyn, N. Y.—Blacksmiths' Anvils.
Hayes File Co., 474 Franklin St., Detroit, Mich.—Files.
Hayes Tool Co., Portland, Me.—Stocks and Dies.
Hayward, H. A., Londonderry, Vt.—Lathe and Planer Tools, Power Hack Saws.
Hazelton & Donald Mche. Co., 612 Discount Pl., Philadelphia, Pa. Tapping Machines, Saw Tables.
Heald Machine Co., Worcester, Mass.—Grinders. *See adv. page 32.*
Heller Bros., Co., Newark, N. J.—Machinists' Hammers.
Helwig Mfg. Co., St. Paul, Minn.—Bolt and Rivet Clippers.
Henderer, E., & Co., Wilmington, Del.—Vises.
Henderer's, A. L., Sons, Wilmington, Del.—Screw Presses, Hydraulic Punches.
Henderson Bros., Waterbury, Conn.—Tumblers.
Henderson Machine Co., 5032 Germantown Ave., Philadelphia, Pa.—Coining and Plain Power Presses.
Hendey Machine Co., Torrington, Conn.—Lathes, Milling Machines, Shapers, etc. *See adv. page 17.*
Heppenstall Forge & Knife Co., Pittsburg, Pa.—Steam Hammers, Plain Power Shears.
Herman, Charles, & Son, Sharpsburg, Pa.—Molding Machines.
Hess-Bright Mfg. Co., 15th and Chestnut Sts., Philadelphia, Pa.—Ball Bearings.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.—Lathes, Beading and Flanging Machines, Crimping Machines, etc.
Hickman-Melhorn Co., Pittsburg, Pa.—Pipe Vises.
Higley Machine Tool Co., Croton Falls, N. Y.—Cold Saw Machines.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass.—Boring, Drilling and Milling Machines, Grinders. *See adv. page 65.*
Hill Tool Co., Anderson, Ind.—Keyseating Machines, Lathes, Boring Tools, etc.
Hilles & Jones Co., Wilmington, Del.—Plate Planers, Bending, Straightening and Coping Machines, etc.
Hisey-Wolf Machine Co., Cincinnati, O.—Drills, Grinders.
Hjorth, William, & Co., Jamestown, N. Y.—Pipe Wrenches.
Hoefer Mfg. Co., Freeport, Ill.—Drills, Power Hack Saws, Wire Formers, etc.
Hogg, George A., Iron & Steel Foundry Co., Pittsburg, Pa.—Roll Turning Lathes.
Hoggson & Pettis Mfg. Co., New Haven, Conn.—Chucks, Gages, Center Squares, etc. *See adv. page 30.*
Hollands Mfg. Co., Erie, Pa.—Anvils, Chucks, Emery Wheel Dressers.
Holroyd & Co., Waterford, N. Y.—Taps, Dies, Screw Plates, Stocks and Dies. *See adv. page 48.*
Honey, John F., 120 Liberty St., New York.—Sand Blast Machinery.
Hopkinson Machine Works, Springfield, Mass.—Drill Vises.
Hoppen, J. E., 508 Pearl St., New York.—Grindstone Frames.
Horton, E., & Son Co., Windsor Locks, Conn.—Chucks.
Howard Iron Works, Buffalo, N. Y.—Bolt and Nut Machinery, Chipping Vises, Pipe Vises. *See adv. page 44.*
Hubbell, Harvey, Bridgeport, Conn.—Screw Slotting and Tapping Machines, Machine Screws.

Hubbard & Co., Murtland Bldg., Pittsburg, Pa.—Blacksmiths' Hammers.
Hubbell, L. D., Hartford, Conn.—Pipe Tapping Machines.
Hurlbut, Rogers, Machine Co., S. Sudbury, Mass.—Cutting Off Machines, Crank Shaft Lathes. *See adv. page 7.*
Hutchinson Roller Bearing Co., Jackson, Mich.—Bearings.
Hyatt Roller Bearing Co., Newark, N. J.—Bearings. *See adv. page 47*
Ideal Opening Die Co., 26 West St., New York.—Pipe Dies and Die Heads.
Ideal Machine Co., Portland, Conn.—Chucks and Lathe Attachments.
Imperial Mfg. Co., Jersey City, N. J.—Pipe Wrenches.
Independent Stone Co., Cuyahoga Bldg., Cleveland, O.—Grindstones.
Indiana Foundry Co., Ltd., Indiana, Pa.—Tuyeres.
Ingalsbe, J. L., Co., Glens Falls, N. Y.—Rasps.
Ingersoll Milling Machine Co., Rockford, Ill.—Milling Machines, Cutters.
Inland Tool & Mfg. Co., 240 W. Lake St., Chicago, Ill.—Lathes, Foot Wheels, Rolling Mills.
International Machine Co., Hudson, Mich.—Wire Fence Machines.
Iron City Tool Works, Pittsburg, Pa.—Blacksmiths' Hammers.
Iroquois Machine Co., 150 Nassau St., New York.—Grinders, Bearings, Rolling Mills, etc.
Jackson, Thaddeus, 416 3d Ave., Brooklyn, N. Y.—Diamond Tools, Chain Drills.
Jacobs, A. I., Hartford, Conn.—Drill Chucks.
Jacobson Machine Mfg. Co., Warren, Pa.—Vises.
James & Foote, 60 S. Canal St., Chicago, Ill.—Milling Machines.
Jaques-Bush Mfg. Co., Providence, R. I.—Lathe Tools.
Jarecki Mfg. Co., Ltd., Erie, Pa.—Chucks, Pipe Dies and Die Heads, Pipe Cutting and Threading Machines.
Jeanesville Iron Works Co., Jeanesville, Pa.—Tool Holders.
Jennings, C. E., & Co., 101 Reade St., New York.—Saws, Pipe Wrenches, Band Saw Blades.
Johnson, E. E., Worcester, Mass.—Lathes.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.—Boring and Drilling Machines, Lathes, Pipe Cutting and Threading Machines.
Johnson, Prentice Co., Worcester, Mass.—Cutting Off Machines.
Jones & Lamson Machine Co., Springfield, Vt.—Bolt and Turret Lathes. *See adv. page 16.*
Justice, Philip S., & Co., 14 N. 5th St., Philadelphia, Pa.—Spring Power Hammers.
Kane & Roach, Syracuse, N. Y.—Blacksmiths' Tools, Drills, Punches.
Kearney & Trecker, Milwaukee, Wis.—Milling Machines.
Keene, Geo. C., & Co., Cincinnati, O.—Corrugating, Crimping and Flanging Machines.
Kelly, R. A., Machine Co., Xenia, O.—Crank Shaping Machines.
Kelsey, D. J., New Haven, Conn.—Bevel Protractors, Draughtsmen's T Squares.
Kemp, C. M., Mfg. Co., Baltimore, Md.—Pipe Vises.
Kempsmith Mfg. Co., Milwaukee, Wis.—Milling Machines, Countershafts, Milling Machine Vises.
Kent Mfg. Co., Kent, O.—Core Making Machines.
Kentucky Gear & Machine Co., Louisville, Ky.—Gear Cutting Machines.
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia, Pa.—Boring, Drilling and Milling Machines, Sawing Machines, etc.
Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.—Tool Holders, Ratchet Drills, Sockets, etc.

Kidder, R. E., Worcester, Mass.—Lathes, Polishing Machines, Power Hammers. *See adv. page 30.*
Kilborn & Bishop Co., New Haven, Conn.—Pipe Vises, Wire Cutting Machines.
Kilbourne & Jacobs Mfg. Co., Columbus, O.—Machine Shop Furniture. *See adv. page 21.*
Kimball Bros. & Sprague, Brockton, Mass.—Tack Machines.
King, J. M., & Co., Waterford, N. Y.—Taps, Screw Plates, Wire Working Machinery, etc.
King Machine Tool Co., Cincinnati, O.—Boring Machines, Boring and Turning Mills, Punches, etc.
Kinsey-Burt Co., 136 Liberty St., New York.—Filing Machines.
Kitselman Bros., Muncie, Ind.—Wire Fence Machines.
Klein-Logan Co., Pittsburg, Pa.—Blacksmiths' Hammers.
Knecht Bros., Co., Cincinnati, O.—Sensitive and Friction Drilling Machines. *See adv. page 66.*
Koch Mfg. Co., Grinnell, Ia.—Power Hammers, Punches and Shears.
Kraeuter & Co., 577 18th Ave., Newark, N. J.—Calipers, Dividers, Hand Reamers, etc.
Lancaster Machine & Knife Works, Lancaster, N. Y.—Ratchet Braces.
Landis Machine Co., Waynesboro, Pa.—Bolt Cutters.
Landis Tool Co., Waynesboro, Pa.—Universal Grinders. *See adv. page 69.*
Lane Tool Co., Cleveland, O.—Drop and Steam Hammers.
Langelier Mfg. Co., Providence, R. I.—Bicycle Machinery, Swaging and Pointing Machines. *See adv. page 39.*
Lapointe Machine Tool Co., 32 Atlantic Av., Boston, Mass.—Keyseaters, Reamers.
Leavitt Machine Co., Orange, Mass.—Lathe Chucks.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.—Chucking, Drilling and Milling Machines, Rack Cutting Machines, etc.
Le Count, Wm. G., South Norwalk, Conn.—Twist Drills, Mandrels, Steel Clamps.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.—Beading and Flanging Machines, Presses, Tinsmiths' Machinery, etc.
Leland & Faulconer Mfg. Co., Detroit, Mich.—Grinders.
Lennox Machine Co., Marshalltown, Ia.—Pipe Tapping, Forming and Bending Machines, Shears.
Lewis Foundry & Machine Co., Pittsburg, Pa.—Punches, Shears, etc.
Lewis Tool Co., 44 Barclay St., New York.—Vises.
Lightning Hoof Shear Co., Wyalusing, Pa.—Hoof Cutters.
Lincoln Iron Works, Rutland, Vt.—Stone Turning Lathes.
Lincoln-Williams Twist Drill Co., Taunton, Mass.—Twist Drills.
Lincoln & Wood Co., Taunton, Mass.—Drills.
Lingle, J. H., Bellefonte, Pa.—Hammers, Punches, Shears.
Lloyd Mfg. Co., Minneapolis, Minn.—Wire Fence Machines.
Lodge & Shipley Machine Tool Co., Cincinnati, O.—Projectile, Screw Cutting and Turret Lathes. *See adv. page 61.*
Logan & Strowbridge Iron Co., New Brighton, Pa.—Pliers.
Lombard, N. A., Co., Worcester, Mass.—Turret and Chucking Lathes.
Long & Allstatter Co., Hamilton, O.—Bending, Straightening, Coping and Notching Machines, Punches, etc.
Lowell Wrench Co., Worcester, Mass.—Drills, Wrenches.
Loyd, John, 558 Water St., New York.—Foot Presses.
Lucas Machine Tool Co., Cleveland, O.—Boring and Drilling Machines, Forcing Presses.
Lufkin Rule Co., Saginaw, Mich.—Steel Tapes.
Luther Mfg. Co., Olean, N. Y.—Tire Shrinkers.

Lyon Metallic Mfg. Co., 18-20 Ann St., Chicago, Ill.—Lathe Pans, Tote Pans, etc.
McCabe, J. J., 14 Dey St., New York.—Drilling and Screw Cutting Lathes.
McCloud, Crane & Winter Co., Worcester, Mass.—Machine Screws.
McCormick, J. S., Co., Pittsburg, Pa.—Sand Mixers, Separators.
McCroden, John & Co., 33 West St., New York.—Grindstones.
McCrosky, F. B., Mfg. Co., Meadville, Pa.—Tool Holders, Reamers. *See adv. page 59.*
McCullough-Dalzell, Crucible Co., Pittsburg, Pa.—Crucibles.
McDonald, A. Y., Mfg. Co., Dubuque, Ia.—Pipe Vises.
McDougall & Potter, 606 W. 55th St., New York.—Steam Hammers.
McLeod, Walter, & Co., Cincinnati, O.—Sand Blast Machinery.
McMahon & Co., Worcester, Mass.—Screw Cutting Lathes.
McNab & Harlin Mfg. Co., 56 John St., New York.—Pipe Vises.
McWilliams & McConnell, Shamokin, Pa.—Pipe Cutting and Threading Machines.
Maines Machine Co., 931 Chestnut St., Philadelphia, Pa.—Pipe Dies and Die Heads.
Mann, Chas. A., Providence, R. I.—Lathes, Slide Rests.
Manville Bros., Co., Waterbury, Conn.—Bicycle Machinery, Lathes, Screw Machines, etc. *See adv. page 43.*
Manville, E. J., Machine Co., Waterbury, Conn.—Bicycle Machinery, Grinders, Punches, etc.
Marietta Stone Co., Inc., Marietta, O.—Grindstones.
Mark Mfg. Co., Evanston, Ill.—Pipe Vises.
Massachusetts Saw Works, Springfield, Mass.—Band Saw Blades, Cold Saw Machines.
Massachusetts Tool Co., Greenfield, Mass.—Lathes, Chucks, Machinists' Small Tools.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.—Vises.
Matthews, Hugh, Kansas City, Mo.—Cylinder Boring Bars.
Maydole, David, Hammer Co., Norwich, N. Y.—Blacksmiths' Hammers.
Mayer Bros., Mankato, Minn.—Plain Power Hammers.
Mayer & Co., 20th St. & Allegheny Ave., Philadelphia, Pa.—Rasps, Files.
Maywood Foundry & Machine Co., Tribune Bldg., Chicago, Ill.—Molding Machines.
Meadville Vise Co., Meadville, Pa.—Boring Machines, Vises.
Mercury Machine Co., 1328 Olive St., Philadelphia, Pa.— Portable Keyseating Machines.
Meehan Boiler & Construction Co., Lowellville, O.—Foundry, Cupolas.
Mergenthaler, Ott, Co., Inc., Baltimore, Md.—Flue Sheet Cutters, Reamers.
Merrell Mfg. Co., Toledo, O.—Chucks, Pipe Dies and Die Heads, Pipe Cutting and Threading Machines.
Merrill Bros., 465-471 Kent Ave., Brooklyn, N. Y.—Vises, Drop Hammers, Trimming Presses, etc.
Merriman, A. H., Meriden, Conn.—Lathes, Drop Hammers, Presses, etc.
Merritt & Co., 1024 Ridge Ave., Philadelphia, Pa.—Machine Shop Furniture.
Mersick, C. S., & Co., New Haven, Conn.—Bar and Gap Shears.
Mesta Machine Co., Pittsburg, Pa.—Plate Shears.
Miami Valley Machine Tool Co., Dayton, O.—Screw Cutting Lathes, Tool Holders. Plain Power Hammers. *See adv. page 57.*
Michigan Machinery Mfg. Co., Ypsilanti, Mich.—Presses, Track Drills, Galvanizing Machinery.
Millers Falls Co., Millers Falls, Mass.—Vises, Machinists' Small Tools, Power Hack Saws.

Millet Core Oven Co., Brightwood, Mass.—Core Ovens.
Miner & Peck Mfg. Co., New Haven, Conn.—Drop Hammers, Drop Presses. *See adv. page 36.*
Mingst, C. P., Evansville, Ind.—Lathe Tools.
Mitts & Merrill, Saginaw, Mich.—Keyseating Machines.
Modern Tool Co., Erie, Pa.—Grinding Machines, Pipe Dies and Die Heads. *See adv. page 58.*
Moline Tool Co., Moline, Ill.—Drills.
Monighan Machine Works, 813 Carroll Ave., Chicago, Ill.—Steam Hammers.
Montgomery & Co., 105-107 Fulton St., New York.—Drills, Grinders, Tapping Machines, etc.
Morgan Construction Co., Worcester, Mass.—Lathes, Presses, Wire Working Machinery.
Morrill, Chas., 277 Broadway, New York.—Pliers.
Morris, P. Hollingsworth, Philadelphia, Pa.—Pipe Cutting and Threading Machines.
Morse Twist Drill & Mch. Co., New Bedford, Mass.—Grinders, Chucks, Drills, etc. *See adv. page 1.*
Morton Mfg. Co., Muskegon Heights, Mich.—Keyseating Machines, Shapers.
Moseley Lathe Co., Elgin, Ill.—Bench Lathes, Draw Chucks.
Mueller, H., Mfg. Co., Decatur, Ill.—Pipe Tapping Machines.
Mueller Machine Tool Co., 216 W. Pearl St., Cincinnati, O.—Drills, Grinders. *See adv. page 6.*
Murdock Corporation, 152 Boylston St., Boston, Mass.—Name Plates. *See adv. page 56.*
Murray Mfg. Co., Richmond Valley, Staten Island, N. Y.—Tapping Machines.
Mussey Stone Co., Elyria, O.—Grinders.
Mutual Machine Co., 25 Wells St., Hartford, Conn.—Drills, Tool Holders, Universal Joints.
Nash, George, & Co., 24 S. Clinton St., Chicago, Ill.—Sand Blast Machinery.
National-Acme Mfg. Co., Cleveland, O.—Bicycle Machinery, Screw Machines, Machine Screws.
National Automatic Tool Co., Dayton, O.—Multiple Spindle Drilling Machines.
National Emery Wheel Co., Worcester, Mass.—Emery Wheels.
National Hardware & Malleable Iron Co., Lehigh Ave., American & 3d Sts., Philadelphia, Pa.—Stocks and Dies.
National Machine Co., Keokuk, Ia.—Tire Shrinkers.
National Machine Co., 660 Washington St., Milwaukee, Wis.—Speed Lathes.
National Machine Tool Co., Cincinnati, O.—Lathe Attachments, Countershafts.
National Machinery Co., Tiffin, O.—Bolt and Nut Machinery, Forming and Bending Machines, Shears, etc.
National Saw Co., Newark, N. J.—Band Saw Blades.
National Separator & Machine Co., Concord, N. H.—Oil Extractors. *See adv. page 40.*
National Twist Drill & Tool Co., Detroit, Mich.—Drills, Chucks, Reamers.
Nator, A., & Co., Cold Spring, N. Y.—Grindstone Frames.
Nazel Machine Tool Works, 1046 Ridge Ave., Philadelphia, Pa.—Centering, Boring and Drilling Machines.
Newbold, R. S., & Son Co., Norristown, Pa.—Rolling Mill Mchy.
New Britain Machine Co., New Britain, Conn.—Machine Shop Furniture, Vises. *See adv. page 47.*

New Doty Mfg. Co., Janesville, Wis.—Shearing and Plate Bending Machines, Presses, etc.
New Haven Mfg. Co., New Haven, Conn.—Drills, Lathes, Slotting Machines.
New Process Twist Drill Co., Taunton, Mass.—Twist Drills.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philadelphia, Pa. Boring, Drilling and Milling Machines, Milling Cutters, etc.
Niagara Machine & Tool Works, Buffalo, N. Y.—Beading and Flanging, Corrugating and Folding Machines, etc.
Nicholson, W. H., & Co., Wilkesbarre, Pa.—Mandrels.
Nicholson File Co., Providence, R. I.—Rasps, Files.
Niles-Bement-Pond Co., 136 Liberty St., New York.—Boring, Milling and Drilling Machines, Heavy Machine Tools. *See adv. page 63.*
Niles Boiler Co., Niles, O.—Annealing Boxes.
Nilson, A. H., Machine Co., Bridgeport, Conn.—Plain Power Presses, Wire Formers.
Northampton Emery Wheel Co., Leeds, Mass.—Grinders, Polishing Lathes, Emery Wheels, etc.
Northern Electrical Mfg. Co., Madison, Wis.—Bench Grinders.
Northern Engineering Works, Detroit, Mich.—Foundry Equipment.
Norton Emery Wheel Co., Worcester, Mass.—Grinders, Emery Wheels and Dressers.
Norton Grinding Co., Worcester, Mass.—Grinders.
Norton & Jones Machine Tool Works, Plainville, Conn.—Drills.
Norwalk Mfg. Co., Norwalk, O.—Bolt and Nut Machinery.
Novelty Mfg. Co., Omaha, Neb.—Tool Grinders.
Nutter, Barnes & Co., 366 Atlantic Ave., Boston, Mass.—Cutting Off, Grinding and Sawing Machines, etc.
Oesterlein Machine Co., Cincinnati, O.—Grinding and Milling Machines.
Ohio Quarries Co., 190 Euclid Ave., Cleveland, O.—Grindstones.
Ohio Machine Tool Co., Kenton, O.—Planers, Shapers.
Ohl, Geo. A., & Co., Inc., Newark, N. J.—Presses, Sheet Metal Mchy.
O. K. Tool Holder Co., Shelton, Conn.—Tool Holders.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.—Drills, Lathes, Presses, etc.
Olmstead, L. H., Hasbrouck Heights, N. J.—Drills, Power Hack Saws.
Oneida National Chuck Co., Oneida, N. Y.—Chucks.
Oster Mfg. Co., Cleveland, O.—Stocks and Dies, Pipe Cutting and Threading Machines, etc.
Oswego Tool Co., Oswego, N. Y.—Pipe Vises and Wrenches.
Owen, W. S., 227 Eddy St., Providence, R. I.—Files.
Owens Machine Tool Co., Springfield, O.—Milling Machines, Milling Cutters.
Page-Storm Drop Forge Co., Springfield, Mass.—Pipe Wrenches.
Parker, Chas., Co., Meriden, Conn.—Vises.
Parmelee Wrench Co., 1056 W. Monroe St., Chicago, Ill.—Pipe Wrenches. *See adv. page 73.*
Patch, F. R., Co., Rutland, Vt.—Stone Turning Lathes.
Patterson Tool & Supply Co., Dayton, O.—Drills, Cold Saw Machines, etc.
Pawling & Harnischfeger, Milwaukee, Wis.—Horizontal Boring and Drilling Machines.
Pawtucket Mfg. Co., Pawtucket, R. I.—Bolt and Nut Machinery, Screw Shaving Machines, Shears. *See adv. page 54.*
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa.—Foundry Equipment. *See adv. page 126.*
Peck, Stow & Wilcox Co., Southington, Conn.—Drills, Corrugating Machines, Double Seaming Machines, etc.
Pedrick & Ayer Co., Plainfield, N. J.—Boring, Grinding and Milling Machines, Chucks, etc.

Perkins Machine Co., Warren, Mass.—Shapers, Drop Hammers, Presses.
Perkins, F. S., Co., Lowell, Mass.—Lathes, Rack Cutting Machines.
Pettibone, Mulliken & Co., Marquette Bldg., Chicago, Ill.—Track Drills.
Philadelphia Pneumatic Tool Co., 21st St. & Allegheny Ave., Philadelphia, Pa.—Drills, Reamers, Rammers, Pneumatic Hammers, etc.
Philadelphia Roll & Machine Co., Philadelphia, Pa.—Alligator Shears.
Phoenix Mfg. Co., Hartford, Conn.—Centering Machines.
Pike Mfg. Co., 151 Chambers St., New York.—Grindstones.
Pittsburg Machine Tool Co., Allegheny, Pa.—Screw Cutting Lathes, Planers.
Pittsburg Mfg. Co., Pittsburg, Pa.—Bending and Straightening Machines, Bulldozers, etc. *See adv. page 44.*
Pleuger & Henger Mfg. Co., St. Louis, Mo.—Tire Benders.
Polk, A. J., & Son, Millersburg, Pa.—Milling Cutters, Reamers, etc.
Pollock, William B., Co., Youngstown, O.—Foundry Cupolas, etc.
Pond, L. W., Machine Co., Worcester, Mass.—Planers, Pulley Lathes.
Poole, J. Morton, Co., Wilmington, Del.—Boring and Turning Mills, Grinders.
Poorman Mfg. Co., Piqua, O.—Grindstone Frames, Corrugating Presses.
Porter Machine Works, Hatfield, Mass.—Screw Cutting Lathes.
Potter & Johnston Machine Co., Pawtucket, R. I.—Chucking and Milling Machines, Shapers, etc.
Potts, H. D., Lancaster, Pa.—Blacksmiths' Tools, Drills.
Pratt Chuck Co., Frankfort, N. Y.—Chucks.
Pratt & Whitney Co., Hartford, Conn.—Milling, Cutting Off and Centering Machines, Lathes, etc. *See adv. page 62.*
Prentice Bros., Co., Worcester, Mass.—Boring and Drilling Machines, Lathes.
Prentice, Geo. G., & Co., New Haven, Conn.—Bicycle Machinery, Lathes, Screw Machines.
Prentiss Vise Co., 44 Barclay St., New York.—Vises.
Pridmore, Henry E., 19th & Rockwell Sts., Chicago, Ill.—Molding Machines.
Pryibil, P., 512 W. 41st St., New York.—Grinders, Lathes, Chucks.
Putnam Machine Co., Fitchburg, Mass.—Boring and Drilling Machines, Milling Machines, etc.
Queen City Machine Tool Co., Cincinnati, O.—Crank Shapers.
Quint, A. D., Hartford, Conn.—Chucking and Drilling Machines, Milling Machines, etc.
Rabiger Bros., & Co., 2d & Diamond Sts., Philadelphia, Pa.—Fillet Tools.
Rahn, Mayer, Carpenter Co., Cincinnati, O.—Lathes.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.—Sawing Machines, Drills, etc.
Rand Drill Co., 128 Broadway, New York.—Drills, Pneumatic Hammers.
Ransom Mfg. Co., Oshkosh, Wis.—Grinders, Lathes, Buffing and Polishing Machines.
Ray Automatic Machine Co., Berea, O.—Automatic Nut Machines.
Reading Standard Mfg. Co., Reading, Pa.—Milling Cutters, Tool Holders, Boring Tools, etc.
Reece, E. F., Co., Greenfield, Mass.—Pipe Dies and Die Heads, Screw Plates, Stocks and Dies, etc. *See adv. page 51.*
Reed & Curtis Machine Screw Co., Worcester, Mass.—Machine Screws, Oil Extractors.
Reed, F. E., Co., Worcester, Mass.—Lathes, Slide Rests, Drills.
Reed, Francis, Co., Worcester, Mass.—Drills, Chucks. *See adv. page 56.*
Reed Mfg. Co., Erie, Pa.—Pipe Dies and Die Heads, Pipe Wrenches, Vises, etc.
Reliance Machine & Tool Co., Cleveland, O.—Bolt Cutters.

Resek Machine Tool Co., Cleveland, O.—Lathes, Milling Machines, etc.
Reserve Press Co., Cleveland, O.—Drills.
Reynolds Bros., Columbus, O.—Files.
Reynolds & Co., New Haven, Conn.—Machine Screws.
Rhodes, L. E., Hartford, Conn.—Shapers.
Rhodes Mfg. Co., Columbus, O.—Drills.
Rich, George R., Mfg. Co., 171 S. Canal St., Chicago, Ill.—Drill Sockets and Chucks.
Richard Mfg. Co., Bloomsburg, Pa.—Draw Benches, Grinders.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philadelphia, Pa.—Milling Machines.
Riter-Conley Mfg. Co., Pittsburg, Pa.—Foundry Cupolas, etc.
Rivett-Dock Co., Brighton, Boston, Mass.—Grinders, Thread Cutting Tools. *See adv. page 53.*
Robbins, Gamwell & Co., Pittsfield, Mass.—Pipe Wrenches.
Robbins, L., Worcester, Mass.—Lathes.
Robertson, John, & Co., 127 Water St., Brooklyn, N. Y.—Pipe Mill Machinery.
Robertson Mfg. Co., 1451 Niagara St., Buffalo, N. Y.—Grinders, Wrenches, Power Hack Saws.
Robinson, J. M., Mfg. Co., Cincinnati, O.—Beading and Flanging Machines, Corrugating Machines, etc.
Robinson Automatic Machine Co., Detroit, Mich.—Buffing and Polishing Machines.
Rochester Die Shaper Co., Rochester, N. Y.—Milling Machine Attachments.
Rock River Machine Co., Janesville, Wis.—Punches and Shears.
Rockwell Engineering Co., 26 Cortlandt St., New York.—Gas or Oil Heaters, Gas Blast Furnaces. *See adv. page 125.*
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J.—Milling Cutters, Mandrels, Gages, etc. *See adv. page 66.*
Rogers Machine Tool Co., Alfred, N. Y.—Boring and Turning Mills, Centering and Drilling Machines.
Rogers, Samuel C., & Co., Buffalo, N. Y.—Grinders.
Root Bros., Co., Plymouth, O.—Riveting Machines.
Root & Vandervoort Engineering Co., Champaign, Ill.—Speed Lathes.
Rotary File & Machine Co., 425 Kent Ave., Brooklyn, N. Y.—Saw Filing Machines.
Rowbottom Machine Co., Inc., Waterbury, Conn.—Grinders, Presses, Rolling Mills.
Royersford Foundry & Machine Co., Royersford, Pa.—Punches and Shears.
Russell, R. M., Binghamton, N. Y.—Grinders, Lathe Attachments.
Safety Emery Wheel Co., Springfield, O.—Grinders, Emery Wheels, Buffing and Polishing Machines.
St. Louis Machine Tool Co., St. Louis, Mo.—Pipe Tapping Machines, Grinders, etc.
Saunders', D., Sons, Yonkers, N. Y.—Pipe Tapping Machines, Reamers, Pipe Cutting and Threading Machines, etc.
Sawyer, Ezra, Worcester, Mass.—Separators.
Sawyer Tool Mfg. Co., Fitchburg, Mass.—Machinists' Small Tools, Hack Saw Blades, etc. *See adv. page 67.*
Schellenbach & Radcliffe, 211 E. 9th St., Cincinnati, O.—Reamers.
Schumacher & Boye, Cincinnati, O.—Lathes.
Scranton & Co., New Haven, Conn.—Plain Power Hammers, Spring Hammers.
Sebastian Lathe Co., Cincinnati, O.—Lathes, Slide Rests, Lathe Tools.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.—Boring, Drilling, Grinding and Milling Machines, etc.

Seneca Falls Mfg. Co., Seneca Falls, N. Y.—Lathes, Chucks, Drill Holders, etc. *See adv. page 20.*
Sennett, George B., Co., Youngstown, O.—Punches and Shears.
Shelley, George, & Sons, Wilkesbarre, Pa.—Pipe Tapping Machines.
Shepard Lathe Co., Cincinnati, O.—Gear Cutting Machines, Lathes, Shaping Machines.
Shuster, F. B., Co., New Haven, Conn.—Drills, Plate Bending Machines, Presses, etc. *See adv. page 42.*
Sibley Machine Tool Co., South Bend, Ind.—Drills.
Sigourney Tool Co., Hartford, Conn.—Drills.
Silk, P. P., Machine Tool Co., Cincinnati, O.—Screw Cutting Lathes.
Silver Mfg. Co., Salem, O.—Drills.
Skinner Chuck Co., New Britain, Conn.—Chucks, Lathe Attachments.
Slate, Dwight, Machine Co., Hartford, Conn.—Drilling, Grinding and Milling Machines, Chucks, etc. *See adv. page 57.*
Slaysman & Co., Baltimore, Md.—Sheet Metal Machinery.
Sloan & Chace Mfg. Co., Ltd., Newark, N. J.—Gear Cutting and Milling Machines, Bench Lathes.
Slocomb, F. F., & Co., Wilmington, Del.—Punching Machines, Pneumatic Riveting Machines. *See adv. page 37.*
Slocomb, J. T., & Co., Providence, R. I.—Calipers, Gages, Micrometers.
Slotkin & Praglin, 210 Canal St., New York.—Foot Wheels.
Smith, A. P., Mfg. Co., Newark, N. J.—Pipe Tapping Machines, Pipe Calking Machines, Pipe Cutters.
Smith Countershaft Co., Melrose, Mass.—Countershafts.
Smith, Ernest G., Columbia, Pa.—Gages, Levels, Beam or Slide Calipers.
Smith, Millard F., 62 Gold St., New York.—Pipe Tapping Machines.
Smith & Mills, Cincinnati, O.—Shapers, Vises.
Snyder, J. E., & Son, Worcester, Mass.—Post and Upright Drills.
Solid Steel Tool Co., 11 S. Jefferson St., Chicago, Ill.—Blacksmiths' Hammers.
Sound Beach Tool Co., Sound Beach, Conn.—Chain Drills.
Southington Cutlery Co., Southington, Conn.—Emery Wheel Dressers.
Special Machinery Co., Bridgeport, Conn.—Blanking Presses, Wire Formers.
Spencer Automatic Machine Screw Co., Hartford, Conn.—Bicycle Machinery, Automatic Screw Machines, etc.
Spencer, J. E., Bridgeport, Conn.—Lathes, Slide Rests.
Spicer Mfg. Co., New Philadelphia, O.—Grinders, Nail Machines.
Sprague Electric Co., 527 W. 34th St., New York.—Drills.
Springfield Foundry Co., Springfield, O.—Screw Cutting Lathes.
Springfield Level & Tool Co., Springfield, Mass.—Calipers, Levels.
Springfield Machine Screw Co., Springfield, Mass.—Hand Hack Saws, Wrenches, etc.
Springfield Mch. Tool Co., Springfield, O.—Chucking Machines, Lathes, Shapers, etc. *See adv. page 23.*
Springfield Mfg. Co., Bridgeport, Conn.—Grinders, Polishing Lathes, Emery Wheels, etc. *See adv. pages 34-35.*
Standard Emery Wheel Co., Albany, N. Y.—Emery Wheels.
Standard Engineering Co., Ellwood City, Pa.—Pipe Cutting and Threading Machines, Stocks and Dies.
Standard Machinery Co., Providence, R. I.—Wire Drawing Mchy.
Standard Railway Equipment Co., National Bank of Commerce Bldg., St. Louis, Mo.—Pneumatic Tools.
Standard Roller Bearing Co., 48th St. & Girard Ave., Philadelphia, Pa. Steel Balls, Bearings.
Standard Sand & Foundry Supply Co., Cleveland, O.—Sand Mixers.
Standard Tire Setter Co., Keokuk, Ia.—Tire Shrinkers.

Standard Tool Co., Athol, Mass.—Machinists' Small Tools.
Standard Tool Co., Cleveland, O.—Grinders, Chucks, Milling Cutters. *See adv. page 50.*
Standard Welding Co., Cleveland, O.—Electric Welding Machines.
Star Mfg. Co., Carpentersville, Ill.—Pipe Wrenches.
Stark Tool Co., Waltham, Mass.—Grinders, Bench Lathes, Profiling Machines. *See adv. page 72.*
Starrett, L. S., Co., Athol, Mass.—Machinists' Small Tools. *See adv. page 4.*
Steel Ball Co., 840 Austin Ave., Chicago, Ill.—Steel Balls.
Steel Set Diamond Co., 36 Gold St., New York.—Hand Diamond Tools.
Steptoe, John, Shaper Co., Cincinnati, O.—Shaping Machines.
Sterling Emery Wheel Mfg. Co., Tiffin, O.—Grinders, Emery Wheels.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.—Machinists' Small Tools.
Stockbridge Machine Co., Worcester, Mass.—Lathes, Planers, Shapers. *See adv. page 22.*
Stokes Bros., Mfg. Co., Freehold, N. J.—Rasps.
Storey, B. W., Sons, Mount Holly, N. J.—Tool Holders.
Storey Motor & Electric Co., Inc., Harrison, N. J.—Grinding, Buffing and Polishing Machines.
Stortz, John, & Son, 210 Vine St., Philadelphia, Pa.—Lathe Tools.
Story, H. T., 18-30 W. Randolph St., Chicago, Ill.—Power Hack Saws.
Stover Mfg. Co., Freeport, Ill.—Tumbling Barrels.
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philadelphia, Pa.—Drills, Grinders, etc.
Stow Mfg. Co., Binghamton, N. Y.—Boring and Drilling Machines, etc.
Streit, A., Machine Co., Cincinnati, O.—Lathes.
Sullivan, J. F., Fitchburg, Mass.—Pipe Wrenches.
Superior Tap Co., Springfield, Vt.—Taps, Lathe Tools.
Sweetser, William A., Brockton, Mass.—Bench Shears, Tack Machines.
Syracuse Twist Drill Co., Syracuse, N. Y.—Twist Drills, Punches, etc.
Tabor Mfg. Co., 18th & Hamilton Sts., Philadelphia, Pa.—Molding Machines.
Tanite Co., Stroudsburg, Pa.—Grinders.
Taylor, Wilson & Co., Ltd., Allegheny, Pa.—Molding Machines.
Thompson, Alexander, Fitchburg, Mass.—Flange Punching Machines, Shears.
Thompson, Henry G., & Son, Co., New Haven, Conn.—Hand Hack Saws, Band Saw Machines.
Thomson Electric Welding Co., Lynn, Mass.—Electric Welding Machines.
Thurston Mfg. Co., Providence, R. I.—Milling Machines, and Cutters.
Tindel-Morris Co., Eddystone, Pa.—Lathe Dogs, Cold Saw Machines.
Tire Setting Machine Co., Lime Rock, Conn.—Tire Shrinkers.
Titusville Iron Co., Titusville, Pa.—Pipe Cutting and Threading Machines.
Toledo Machine & Tool Co., Toledo, O.—Presses, Punches, Riveting Machines, etc.
Tolman, Cyrus S., Fitchburg, Mass.—Polishing Lathes.
Torrey Roller Bushing Co., Bath, Me.—Name Plates.
Tower & Lyon, 95 Chambers St., New York.—Machinists' Small Tools, Vises, etc.
Treadwell, M. H., & Co., 97 Liberty St., New York.—Ladles.
Trenton Iron Co., Trenton, N. J.—Draw Benches.
Tretheway, Samuel, & Co., Ltd., Pittsburg, Pa.—Steam Hammers.
Trimont Mfg. Co., Roxbury, Mass.—Pipe Wrenches, Hand Pipe Cutters. *See adv. page 70.*
Troy File Works, Troy, N. Y.—Files.

Trump Bros. Machine Co., Wilmington, Del.—Grinders, Chucks.
Tucker Machine Co., Cincinnati, O.—Grinders. *See adv. page 68.*
Tucker, W. W., & C. F., Hartford, Conn.—Oil Hole Cups and Covers. *See adv. page 40.*
Turner Brass Works, 50 W. Franklin St., Chicago, Ill.—Name Plates.
Turner, F. L., & Co., Orange, Mass.—Calipers, Gages, Squares.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.—Wire Working and Chain Mchy. *See adv. page 52.*
Tyrone Foundry & Machine Co., Tyrone, Pa.—Pipe and Tube Mill Machinery.
Underwood, H. B., & Co., 1025 Hamilton St., Philadelphia, Pa.—Portable Machine Tools.
Union Mfg. Co., New Britain, Conn.—Chucks, Faceplates and Jaws. *See adv. page 31.*
Union Tire Co., Plainfield, N. J.—Tapping Machines, Tool Holders.
United Engineering & Foundry Co., Pittsburg, Pa.—Pipe and Tube Mill Machinery, Shears.
United States Tool Co., Springfield, O.—Lathe Tools.
Upton & Gilman, Lowell, Mass.—Countershafts.
Utica Drop Forge & Tool Co., Utica, N. Y.—Pliers.
Valley City Machine Works, Grand Rapids, Mich.—Grinders.
Vanderbeek Tool Works, Hartford, Conn.—Drills and Universal Joints. *See adv. page 27.*
Vandyck, J. R., Co., 8 Dey St., New York.—Grinding and Sawing Machines.
Vaughan & Bushnell Mfg. Co., 875 Carroll Ave., Chicago, Ill.—Machinists' Hammers.
Verona Tool Works, Pittsburg, Pa.—Blacksmiths' Hammers.
Vieillard & Oswald Press Co., 93 Pearl St., Brooklyn, N. Y.—Presses.
Vitrified Wheel Co., Westfield, Mass.—Grinders, Emery Wheels and Dressers.
Von Wyck Machine Tool Co., Cincinnati, O.—Screw Cutting Lathes.
Vulcan Crucible Steel Co., Aliquippa, Pa.—Steel Balls.
Vulcan Foundry & Machine Co., New Castle, Pa.—Shears.
Wakefield, J. E., Worcester, Mass.—Pipe Vises.
Walcott, Geo. D., & Son, Jackson, Mich.—Screw Cutting Lathes, Rack Cutting Machines, etc.
Walker, E. A., Front & Laurel Sts., Philadelphia, Pa.—Planers.
Walker, O. S., & Co., Worcester, Mass.—Grinders, Chucks. *See adv. page 3.*
Wallace Co., Port Austin, Mich.—Grindstones.
Walter, E. P., Bridgeport, Conn.—Planers, Shapers, Tapping Machines.
Waltham Emery Wheel Co., Waltham, Mass.—Emery Wheels.
Waltham Machine Works, Waltham, Mass.—Gear Cutting and Milling Machines, Lathes.
Waltham Watch Tool Co., Springfield, Mass.—Lathes, Milling Machines, Chucks. *See adv. page 18.*
Walworth Mfg. Co., 136 Federal St., Boston, Mass.—Pipe Tapping Machines, Vises, etc.
Ward, Edgar T., & Sons, 23 Purchase St., Boston, Mass.—Sand Blast Machinery.
Warner, M. R., & Son, Cromwell, Conn.—Blacksmiths' Hammers.
Warner & Swasey Co., Cleveland, O.—Boring, Grinding and Milling Machines, etc.
Warnock Mfg. Co., 22 High St., Boston, Mass.—Pipe Wrenches.
Washburn Shops, Worcester, Mass.—Drills, Lathes.
Waterbury, F. F., & Mch. Co., Waterbury, Conn.—Bicycle Machinery, Lathes, Presses, etc. *See adv. page 38.*

Waterbury Machine Co., Waterbury, Conn.—Lathes, Presses, Wire Working Machinery, etc. *See adv. page 51.*
Waterbury Tool Co., Waterbury, Conn.—Drills.
Watson-Stillman Co., 204 E. 43d St., New York.—Hydraulic Punches, Presses, Shears, etc. *See adv. page 41.*
Webster & Perks Tool Co., Springfield, O.—Bolt and Nut Machinery, Grinding and Polishing Machinery, etc. *See adv. page 55.*
Welles, F. A., Milwaukee, Wis.—Calipers, Gages.
Wells Brothers Co., Greenfield, Mass.—Taps, Dies, Screw Plates, etc. *See adv. page 13.*
Wells, Fred E., & Son, Greenfield, Mass.—Pipe Dies and Die Heads.
Westcott Chuck Co., Oneida, N. Y.—Chucks.
West Haven Mfg. Co., New Haven, Conn.—Hand Hack Saws, Hack Saw Blades, etc. *See adv. page 58.*
West Mfg. Co., Buffalo, N. Y.—Beading and Flanging, Crimping Machines, etc.
West Penn Foundry & Machine Co., Avonmore, Pa.—Plate Shears.
West St. Louis Mch. & Tool Co., 606 Manchester Ave., St. Louis, Mo. Shovel Machinery.
Western Automatic Machine Screw Co., Elyria, O.—Machine Screws.
Western Machine Tool Works, Holland, Mich.—Drills.
Western Tool & Mfg. Co., Springfield, O.—Tool Holders, Mandrels, etc.
West Tire Setter Co., Rochester, N. Y.—Tire Shrinkers.
Weyburn Co., Rockford, Ill.—Blacksmiths' Tools.
Wheeler, Frank, & Son, Meriden, Conn.—Box Tools, Presses, Rolling Mills, etc.
Wheeler, J. S., Worcester, Mass.—Planers.
Whitcomb Mfg. Co., Worcester, Mass.—Planers, Punches, Shears, etc. *See adv. page 50.*
White, John A., Co., Dover, N. H.—Grinders, Speed Lathes.
Whiting Foundry Equipment Co., Harvey, Ill.—Foundry Equipment.
Whiting, George, Co., Chicago, Ill.—Gap Shears.
Whitman & Barnes Mfg. Co., Akron, O.—Milling Cutters, Twist Drills.
Whitney Mfg. Co., Hartford, Conn.—Drills, Grinders, Milling Machines.
Whiton, D. E., Mch. Co., New London, Conn.—Gear Cutting and Rack Cutting Machines, Chucks, etc. *See adv. page 30.*
Wickes Bros., Saginaw, Mich.—Pipe or Tube Bending Machines.
Wiley & Russell Mfg. Co., Greenfield, Mass.—Machinists' Small Tools. *See adv. page 6.*
Williams, J. H., & Co., 9-31 Richards St., Brooklyn, N. Y.—Gages, Standard Machines, etc.
Williams Tool Co., Erie, Pa.—Pipe Cutting and Threading Machines.
Williams, White & Co., Moline, Ill.—Punches, Shears, Hammers, etc. *See adv. page 44.*
Williamson Mfg. Co., Bradford, Pa.—Vises.
Wilmarth & Morman Co., Grand Rapids, Mich.—Arbor Presses, Grinders.
Wilson, W. A., Machine Co., Rochester, N. Y.—Planers.
Windsor Machine Co., Windsor, Vt.—Grinders, Turret Lathes, etc. *See adv. page 20.*
Winkley Co., Hartford, Conn.—Oil Hole Cups and Covers. *See adv. page 73.*
Winter Bros., Co., Wrentham, Mass.—Machinists' Small Tools.
Withey-Wright Co., Reed City, Mich.—Roll Grinders.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.—Beading and Flanging Machines, Presses, etc.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.—Bending and Straightening Machines, Punches, etc.
Woodward Governor Co., Rockford, Ill.—Grinders.

Woodward & Powell Planer Co., Worcester, Mass.—Planers.
Woodward & Rogers Co., Hartford, Conn.—Drills, Grinders, etc.
Worcester Emery Wheel Co., Worcester, Mass.—Emery Wheels.
Worcester Machine Tool Co., Worcester, Mass.—Screw Cutting Lathes.
Wright, Chas. E., Co., New Orange, N. J.—Band Saw Machines.
Wrigley, Thos., 302 Dearborn St., Chicago, Ill.—Emery Wheel Dressers.
Wyke, J., & Co., East Boston, Mass.—Gages, Squares, etc.
Young, J. W., Jackson & Clinton Sts., Chicago, Ill.—Drills.
Young, W. C., Mfg. Co., Worcester, Mass.—Lathes, Shears and Punches.
See adv. page 27.
Zacharias, C. R., Asbury Park, N. J.—Lawn Mower Grinders.

MACHINE TOOLS, METAL WORKING MACHINERY, ETC.

BICYCLE MACHINERY.

BRAZING TABLES. For brazing bicycle parts, and heating the parts for bending.

American Gas Furnace Co., 23 John St., New York.
Buffalo Dental Mfg. Co., Buffalo, N. Y.
Fox Machine Co., Grand Rapids, Mich.

CONE MACHINES. For forming, drilling, tapping and cutting bicycle cones.

American Tool Works Co., Cincinnati, O.
Pratt & Whitney Co., Hartford, Conn.

DRILLS. See 110, under Machine Tools.

HEATING MACHINES. For hardening bicycle balls.

American Gas Furnace Co., 23 John St., New York.

Chicago Flexible Shaft Co., La Salle Ave. & Ontario St., Chicago, Ill.

HUB MACHINES. For counterboring the unfinished ends of hubs; and cutting the threads.

American Tool Works Co., Cincinnati, O.
Bardons & Oliver, Cleveland, O.
Garvin Machine Co., Spring & Varick Sts., New York.
Pratt & Whitney Co., Hartford, Conn.

HUB FORMING AND DRILLING MACHINES. For forming and drilling hubs.

American Tool Works Co., Cincinnati, O.
Bardons & Oliver, Cleveland, O.
Garvin Machine Co., Spring & Varick Sts., New York.
Pratt & Whitney Co., Hartford, Conn.

KEY SEATING MACHINES. See 178, under Machine Tools.

LATHES. See 181, under Machine Tools.

NIPPLE DRILLING, TAPPING AND SLABBING MACHINES. For converting headed blanks into nipples; for pointing, centering, drilling, tapping, flattening or squaring them.

Langelier Mfg. Co., Providence, R. I. *See adv. page 39.*

NIPPLE DRILLING MACHINES, continued

Manville Bros. Co., Waterbury, Conn.
Manville, E. J., Machine Co., Waterbury, Conn.

11 **NIPPLE HEADING MACHINES.** For straightening, feeding and cutting nipple blanks.

Manville Bros. Co., Waterbury, Conn.
Manville, E. J., Machine Co., Waterbury, Conn.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

12 **NIPPLE AND SCREW SLOTTERS.** For slotting the heads of nipples and screws. See also 248, under Machine Tools.

Brown & Sharpe Mfg. Co., Providence, R. I.
Garvin Machine Co., Spring & Varick Sts., New York.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Pratt & Whitney Co., Hartford, Conn.

13 **PEDAL BARREL MACHINES.** For making bicycle pedal barrels.

American Tool Works Co., Cincinnati, O.
Automatic Machine Co., Greenfield, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Cleveland Automatic Machine Co., Cleveland, O.
Hartford Machine Screw Co., Hartford, Conn.
Langelier Mfg. Co., Providence, R. I. *See adv. page 39.*
National Acme Mfg. Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
Prentice, Geo. G., & Co., New Haven, Conn.
Spencer Automatic Machine Screw Co., Hartford, Conn.
Warner & Swasey Co., Cleveland, O.
Windsor Machine Co., Windsor, Vt.

14 **PEDAL PIN MACHINES.** For making pins for bicycle pedals.

American Tool Works Co., Cincinnati, O.
Automatic Machine Co., Greenfield, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Cleveland Automatic Machine Co., Cleveland, O.
Hartford Machine Screw Co., Hartford, Conn.
National Acme Mfg. Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
Prentice, Geo. G., & Co., New Haven, Conn.
Spencer Automatic Machine Screw Co., Hartford, Conn.
Warner & Swasey Co., Cleveland, O.
Windsor Machine Co., Windsor, Vt.

15 **RIM ROLLING MACHINES.** For rolling bicycle mud guards and rims.

Blake & Johnson, Waterbury, Conn.

16 **SPOKE HEADING MACHINES.** For upsetting and heading bicycle spokes; and similar work.

Blake & Johnson, Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

17 **SPOKE THREADING MACHINES.** For threading spokes.

Blake & Johnson, Waterbury, Conn.
Detrick & Harvey Machine Co., Baltimore, Md.
Geometric Drill Co., New Haven (Westville St.), Conn.
Goodell-Pratt Co., Greenfield, Mass.
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*

18 **SPOKE THREAD ROLLING MACHINES.** For rolling the threads on bicycle spokes.

Blake & Johnson, Waterbury, Conn.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

19 **VISES.** See under 313, Vises.

20 **WRENCHES.** See 448, under Machinists' Small Tools.

---

21 BLACKSMITHS' TOOLS AND APPLIANCES.

22 **ANVILS.** Blocks of iron or steel on which masses of material are forged.

Bullock, T. H., Bellows & Forge Co., Cleveland, O.
Columbus Anvil & Forging Co., Columbus, O.
Columbus Forge & Iron Co., Columbus, O.
Eagle Anvil Works (Fisher & Norris), Trenton, N. J.
Foos Mfg. Co., Springfield, O.
Hay-Budden Mfg. Co., 270 N. Henry St., Brooklyn, N. Y.
Hollands Mfg. Co., Erie, Pa.

23 **BELLOWS.** See Finding List.

24 **BLOWERS.** See Finding List.

25 **CUTTERS, HOOF.** For paring hoofs and clinching nails.

Baer, A. J., Shoenersville, Pa.
Bliss, W. L., South Egremont, Mass.
Lightning Hoof Shear Co., Wyalusing, Pa.

26 **DRILLS.** See 111, under Machine Tools.

27 **FORGES.** See Finding List.

28 **HAMMERS, BLACKSMITHS' HAND.** Specially adapted for blacksmiths' use.

Anderson, W. H., & Sons, Detroit, Mich.
Atha Tool Co., Newark, N. J.
Billings & Spencer Co., Hartford, Conn.
Cheney, Henry, Hammer Co., Little Falls, N. Y.
Collins Co., Collinsville, Conn.
Evansville Tool Co., Evansville, Ind.
Hammond, C., & Son, Ogontz, Pa.
Hubbard & Co., Murtland Bldg., Pittsburg, Pa.
Iron City Tool Works, Pittsburg, Pa.

HAMMERS, BLACKSMITHS', continued

Klein-Logan Co., Pittsburg, Pa.
Maydole, David, Hammer Co., Norwich, N. Y.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Solid Steel Tool Co., 11 S. Jefferson St., Chicago, Ill.
Verona Tool Works, Pittsburg, Pa.
Warner, M. R., & Son, Cromwell, Conn.

29 **Power.** See 493, Hammers, Power Plain.

30 **Steam.** See 495, Hammers, Steam.

31 **MANDRELS, BLACKSMITHS' TAPER.** For shaping or rounding rings or bands.

Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

32 **RASPS.** For removing membrane or other rough surfaces by abrasion.

Barnett, G. & H., Co., 21 Richmond St., Philadelphia, Pa.
Ingalsbe, J. L., Co., Glens Falls, N. Y.
Mayer & Co., Philadelphia, Pa.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

33 **TIRE BENDERS.** Machines for bending tires.

Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Boynton & Plummer, Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Comstock, Geo. S., Mechanicsburg, Pa.
Fulton Iron & Engine Works, Detroit, Mich.
Kane & Roach, Syracuse, N. Y.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Potts, H. D., Lancaster, Pa.
Wells Bros. Company, Greenfield, Mass.
Weyburn Co., Rockford, Ill.
Wiley & Russell Mfg. Co., Greenfield, Mass.

34 **TIRE BOLT HOLDERS.** For clamping bolts while the nuts are being turned.

Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

35 **TIRE MARKERS.** See 38, Tire Shrinkers.

36 **TIRE MEASURING WHEELS.** Accurately graduated wheels with an index hand, for measuring tires.

Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

37 **TIRE SETTERS.** See 38, Tire Shrinkers.

38 **TIRE SHRINKERS.** For shrinking tires instead of cutting and welding.

Boynton & Plummer, Worcester, Mass. *See adv. page 23.*

TIRE SHRINKERS, continued

Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Co., 190 High St., Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Comstock, Geo. S., Mechanicsburg, Pa.
Fulton Iron & Engine Works, Detroit, Mich.
Kane & Roach, Syracuse, N. Y.
Luther Mfg. Co., Olean, N. Y.
National Mch. Co., Keokuk, Ia.
Potts, H. D., Lancaster, Pa.
Standard Tire Setter Co., Keokuk, Ia.
Tire Setter Machine Co., Lime Rock, Conn.
Wells Bros. Company, Greenfield, Mass.
West Tire Setter Co., Rochester, N. Y.
Weyburn Co., Rockford, Ill.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Williams, White & Co., Moline, Ill.

39 **TIRE UPSETTERS.** See 38, Tire Shrinkers.

40 **TIRE WELDING MACHINES.** For welding tires.

Champion Blower & Forge Co., Lancaster, Pa.
Kane & Roach, Syracuse, N. Y.
Long & Allstatter Co., Hamilton, O.
Williams, White & Co., Moline, Ill.

41 **TUYERES.** Pipes through which air is forced into forges or cupolas.

Buffalo Forge Co., Buffalo, N. Y.
Bullock, T. H., Bellows & Forge Co., Cleveland, O.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Champion Blower & Forge Co., Lancaster, Pa.
Clymer Mfg. Co., Indiana, Pa.
Comstock, Geo. S., Mechanicsburg, Pa.
Indiana Foundry Co., Ltd., Indiana, Pa.
Weyburn Co., Rockford, Ill.

---

42 BOLT AND NUT MACHINERY.

43 **BURRING MACHINES.** For removing burrs from hot pressed nuts.

Howard Iron Works, Buffalo, N. Y.

44 **CLIPPERS, BOLT AND RIVET.** For cutting off the projecting ends of bolts and rivets.

Helwig Mfg. Co., St. Paul, Minn.

45 **Stay-Bolt.** For cutting off the projecting ends of stay-bolts.

Helwig Mfg. Co., St. Paul, Minn.

46 **CUTTERS, BOLT.** For cutting the threads on bolts.

Acme Machinery Co., Cleveland, O.

CUTTERS, BOLT, continued

American Tool Works Co., Cincinnati, O.
Boynton & Plummer, Worcester, Mass. *See adv. page 23.*
Brown, H. B., & Co., East Hampton, Conn.
Columbus Machine Co., Columbus, O.
Detrick & Harvey Machine Co., Baltimore, Md.
Haberle & Graham, South Bend, Ind.
Howard Iron Works, Buffalo, N. Y. *See adv. page 44.*
Landis Machine Co., Waynesboro, Pa.
National Machinery Co., Tiffin, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Norwalk Mfg. Co., Norwalk, O.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Reliance Machine & Tool Co., Cleveland, O.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Standard Engineering Co., Ellwood City, Pa.
Webster & Perks Tool Co., Springfield, O.
Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

47 **Automatic.** Cutters in which the action is automatic.

Acme Machinery Co., Cleveland, O.

48 **Hand.** For cutting bolts by hand.

Boynton & Plummer, Worcester, Mass.
Wells Bros. Company, Greenfield, Mass.

49 **Stay-Bolt.** For cutting threads on large stay-bolts.

Acme Machinery Co., Cleveland, O.
Brown, H. B., & Co., East Hampton, Conn.
National Machinery Co., Tiffin, O.

50 **Track.** For cutting threads on bolts that are used in laying tracks.

Acme Machinery Co., Cleveland, O.
Brown, H. B., & Co., East Hampton, Conn.
National Machinery Co., Tiffin, O.

51 **DIES, BOLT.** For cutting threads on bolts.

Bay State Tap & Die Co., Mansfield, Mass.
Brown, H. B., & Co., East Hampton, Conn.
Butterfield & Co., Derby Line, Vt. *See adv. page 40.*
Card, S. W., Mfg. Co., Mansfield, Mass. *See adv. page 49.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Hart Mfg. Co., Cleveland, O. *See adv. page 48.*
Holroyd & Co., Waterford, N. Y. *See adv. page 48.*
Morse Twist Drill & Machine Co., New Bedford, Mass. *See adv. page 1.*
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Reece, E. F., Co., Greenfield, Mass. *See adv. page 51.*
Saunders', D., Sons, Yonkers, N. Y.
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*
Wells Bros. Company, Greenfield, Mass. *See adv. page 13.*
Wiley & Russell Mfg. Co., Greenfield, Mass. *See adv. page 6.*

DIES, BOLT, continued

Winter Bros. Co., Wrentham, Mass.

52 **FACING MACHINES, NUT.** For finishing the faces of nuts.

Detrick & Harvey Machine Co., Baltimore, Md.
National Machinery Co., Tiffin, O.

53 **FORGES.** See Finding List.

54 **FORGING MACHINES, BOLT.** For forging bolts.

Acme Machinery Co., Cleveland, O.
Ajax Mfg. Co., Cleveland, O. *See adv. page 45.*
National Machinery Co., Tiffin, O.
Pawtucket Mfg. Co., Pawtucket, R. I. *See adv. page 54.*

55 **HEADING MACHINES, BOLT.** For heading bolts.

Acme Machinery Co., Cleveland, O.
Ajax Mfg. Co., Cleveland, O. *See adv. page 45.*
Baush Machine Tool Co., Springfield, Mass. *See adv. page 12.*
Blake & Johnson, Waterbury, Conn.
Boynton & Plummer, Worcester, Mass. *See adv. page 23.*
Brown, H. B., & Co., East Hampton, Conn.
Cook, Asa S., Co., Hartford, Conn.
Howard Iron Works, Buffalo, N. Y. *See adv. page 44.*
National Machinery Co., Tiffin, O.
Pawtucket Mfg. Co., Pawtucket, R. I. *See adv. page 54.*

56 **HEADING, UPSETTING AND FORGING MACHINES.** For general work on bolts, rivets and upsets.

Acme Machinery Co., Cleveland, O.
Ajax Mfg. Co., Cleveland, O. *See adv. page 45.*
National Machinery Co., Tiffin, O.
Pawtucket Mfg. Co., Pawtucket, R. I. *See adv. page 54.*

57 **HEAD MILLING MACHINES, BOLT AND NUT.** For milling bolt, nut or screw heads, or for heavy slotting.

Niles-Bement-Pond Co., 136 Liberty St., New York.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Slate, Dwight, Machine Co., Hartford, Conn. *See adv. page 57.*

58 **NUT MACHINES, AUTOMATIC.** For automatically cutting, drilling and tapping nuts from a coil.

Ray Automatic Machine Co., 1-5 Water St., Cleveland, O.

59 **Cold Pressed.** For making nuts from solid bars of cold metal.

Dunham Nut Co., Unionville, Conn.
Pawtucket Mfg. Co., Pawtucket, R. I. *See adv. page 54.*
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

60 **Hot Pressed.** For making nuts from hot forgings.

Ajax Mfg. Co., Cleveland, O. *See adv. page 45.*
Chambersburg Engineering Co., Chambersburg, Pa.,
Howard Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, O.

61 **POINTING MACHINES, BOLT.** For shaping and finishing the points of bolts and studs.

Acme Machinery Co., Cleveland, O.
Brown, H. B., & Co., East Hampton, Conn.
Cook, Asa S., Co., Hartford, Conn.
Detrick & Harvey Machine Co., Baltimore, Md.
Howard Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, O.
Pawtucket Mfg. Co., Pawtucket, R. I. *See adv. page 54.*
Wells Bros. Company, Greenfield, Mass.

62 **TAPPERS, NUT.** For tapping the holes in nuts.

Acme Machinery Co., Cleveland, O.
Ajax Mfg. Co., Cleveland, O. *See adv. page 45.*
Boynton & Plummer, Worcester, Mass.
Brown, H. B., & Co., East Hampton, Conn.
Columbus Machine Co., Columbus, O.
Detrick & Harvey Machine Co., Baltimore, Md.
Howard Iron Works, Buffalo, N. Y. *See adv. page 44.*
Norwalk Mfg. Co., Norwalk, O.
Pawtucket Mfg. Co., Pawtucket, R. I.
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*
Wells Bros. Company, Greenfield, Mass. *See adv. page 13.*
Wiley & Russell Mfg. Co., Greenfield, Mass.

63 **Automatic.** In which the blank nuts after being tapped are automatically ejected.

Ajax Mfg. Co., Cleveland, O. *See adv. page 45.*
Detrick & Harvey Machine Co., Baltimore, Md.
Howard Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, O.

64 **Geared.** In which the spindles can be run at various speeds, and any spindle stopped independent of the others.

Acme Machinery Co., Cleveland, O.
Brown, H. B., & Co., East Hampton, Conn.
National Machinery Co., Tiffin, O.

65 **Rotary.** In which the nuts are placed in the holders as the pan revolves.

Howard Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, O.

66 **Two Spindle.** For tapping carriage axle nuts having solid ends.

Acme Machinery Co., Cleveland, O.
National Machinery Co., Tiffin, O.

67 **THREADING MACHINES, BOLT.** For cutting the threads on bolts. See also 46, Bolt Cutters.

Acme Machinery Co., Cleveland, O.
Brown, H. B., & Co., East Hampton, Conn.
Cook, Asa S., Co., Hartford, Conn.
Detrick & Harvey Machine Co., Baltimore, Md.
Howard Iron Works, Buffalo, N. Y. *See adv. page 44.*

THREADING MACHINES, BOLT, continued

Pawtucket Mfg. Co., Pawtucket, R. I. *See adv. page 54.*
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*
Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

68 **WASHER MACHINES.** For making metal washers.

Cleveland Punch & Shear Works Co., Cleveland, O.
National Machinery Co., Tiffin, O.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

---

69 FOUNDRY EQUIPMENT.

70 **ANNEALING BOXES.** In which articles to be annealed are enclosed while in the furnace.

Girard Boiler & Mfg. Co., Girard, O.
Meehan Boiler & Construction Co., Lowellville, O.
Niles Boiler Co., Niles, O.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa.
Pollock, William B., Co., Youngstown, O.

71 **BLOWERS, FANS, ETC.** See Finding List.

72 **CORE MAKING MACHINES.** For making cores.

Brown Specialty Machine Co., 69 W. Jackson Blvd., Chicago.
Kent Mfg. Co., Kent, O.

73 **CORE OVENS.** For baking cores.

Blodgett, G. S., Co., Burlington, Vt.
Byram & Co., Inc., Detroit, Mich.
Dodge Mfg. Co., Mishawaka, Ind.
Millet Core Oven Co., Brightwood, Mass.
Whiting Foundry Equipment Co., Harvey, Ill.

74 **CRANES, HOISTS, ETC.** See Finding List.

75 **CRUCIBLES.** Vessels made of clay, graphite, etc., for melting metals or minerals.

Dixon, Joseph, Crucible Co., Jersey City, N. J.
Gautier, J. H., & Co., Jersey City, N. J.
McCullough-Dalzell Crucible Co., Pittsburg, Pa.

76 **CUPOLAS.** Shaft-furnaces for melting iron for foundry use.

Byram & Co., Inc., Detroit, Mich.
Girard Boiler & Mfg. Co., Girard, O.
Meehan Boiler & Construction Co., Lowellville, O.
Northern Engineering Works, Detroit, Mich.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa. *See adv. page 126.*
Pollock, William B., Co., Youngstown, O.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

77 **FLASKS.** For holding sand molds in which casts are to be made.

Adams Co., Dubuque, Ia.
Barnett, Oscar, Fdy. Co., Newark, N. J.
Diamond Clamp & Flask Co., Richmond, Ind.
Northern Engineering Works, Detroit, Mich.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa. *See adv. page 126.*
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Riter-Conley Mfg. Co., Pittsburg, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

78 **FURNACES.** See Finding List.

79 **LADLES.** For carrying molten metal from the furnace to the mold.

Byram & Co., Inc., Detroit, Mich.
Girard Boiler & Mfg. Co., Girard, O.
Meehan Boiler & Construction Co., Lowellville, O.
Northern Engineering Works, Detroit, Mich.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa. *See adv. page 126.*
Pollock, William B., Co., Youngstown, O.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Treadwell, M. H., & Co., 97 Liberty St., New York.

80 **MOLDING MACHINES.** For making molds in flasks.

Adams Co., Dubuque, Ia.
Arcade Mfg. Co., Freeport, Ill.
Blake, George F., Mfg. Co., 114 Liberty St., New York.
Bryan Vacuum Moulding Machine Co., Lockport, N. Y.
Cleveland Automatic Molding Machine Co., Cleveland, O.
Herman, Charles, & Son, Sharpsburg, Pa.
Lombard, N. A., Co., Worcester, Mass.
Maywood Foundry & Machine Co., Tribune Bldg., Chicago, Ill.
Pridmore, Henry E., 19th and Rockwell Sts., Chicago, Ill.
Tabor Mfg. Co., 18th and Hamilton Sts., Philadelphia, Pa.
Taylor, Wilson & Co., Ltd., Allegheny, Pa.

81 **Pulley.** Adapted to making pulley molds.

American Foundry & Machine Co., Hanover, York Co., Pa.
Delano, E. A., 50 S. Clinton St., Chicago, Ill.

82 **RAMMERS.** For compacting material in the mold.

Brown & Sharpe Mfg. Co., Providence, R. I.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa.
Philadelphia Pneumatic Tool Co., 21st St. & Allegheny Ave., Philadelphia, Pa.

83 **SAND BLAST MACHINERY.** For cleaning castings.

Honey, John F., 120 Liberty St., New York.
McLeod, Walter & Co., Cincinnati, O.
Nash, Geo., & Co., 24 S. Clinton St., Chicago, Ill.

SAND BLAST MACHINERY, continued

Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa. *See adv. page 126.*
Ward, Edgar T., & Sons, 23 Purchase St., Boston, Mass.

84 **SAND MIXERS.**

Barbour-Stockwell Co., Cambridgeport, Mass.
McCormick, J. S., Co., Pittsburg, Pa.
Sellers, William, & Co., Inc., 1600 Hamilton St., Philda, Pa.
Standard Sand & Foundry Supply Co., Cleveland, O.

85 **SAND SIFTERS.**

Bonnot Co., Canton, O.
Byram & Co., Inc., Detroit, Mich.
Gould & Eberhardt, Newark, N. J.
Hanna Engineering Works, 820 Elston Ave., Chicago, Ill.

86 **SEPARATORS.** For separating brass from iron chips.

Barnard & Leas Mfg. Co., Moline, Ill.
Ding's Electro-Magnetic Separator Co., Milwaukee, Wis.
Elm City Engineering Co., New Haven, Conn.
McCormick, J. S., Co., Pittsburg, Pa.
Sawyer, Ezra, Worcester, Mass.

87 **TUMBLING BARRELS.** In which castings are cleaned by friction against each other.

Adams Co., Dubuque, Ia.
Baird Machine Co., Oakville, Conn.
Gilmour, J., 99 Nassau St., New York.
Globe Machine & Stamping Co., Cleveland, O.
Henderson Bros., Waterbury, Conn.
Northern Engineering Works, Detroit, Mich.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa. *See adv. page. 126.*
Stover Mfg. Co., Freeport, Ill.
Waterbury Farrel Fdry & Machine Co., Waterbury, Conn.
Whiting Foundry Equipment Co., Harvey, Ill.

---

88 ## MACHINE TOOLS.

89 **ARBOR PRESSES.** For forcing mandrels or arbors into bored work which is to be turned on centers in a lathe.

Barnes, W. F., & John Co., Rockford, Ill.
Bartlett, E. E., 364 Atlantic Av., Boston, Mass. *See adv. page 18.*
Fox Machine Co., Grand Rapids, Mich.
Lucas Machine Tool Co., Cleveland, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Wilmarth & Morman Co., Grand Rapids, Mich.

90 BORING MACHINES.

91 **Car Box.** For boring car boxes.

Detrick & Harvey Machine Co., Baltimore, Md.

92 **Car Wheel.** For boring car wheels.

Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

93 **Cylinder.** For boring engine cylinders and similar parts.

Beaman & Smith Co., Providence, R. I.
Betts Machine Co., Wilmington, Del.
Binsse Machine Co., Newark, N. J.
Fosdick Machine Tool Co., Cincinnati, O.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Meadville Vise Co., Meadville, Pa.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pedrick & Ayer Co., Plainfield, N. Y.
Prentice Bros. Co., Worcester, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philda, Pa.

94 PORTABLE. For re-boring cylinders in position.

Central Machine Works, Indianapolis, Ind.
Matthews, Hugh, Kansas City, Mo.
Underwood, H. B., & Co., 1025 Hamilton St., Philda, Pa.

95 **Horizontal.** In which the cutting tools are carried on a horizontal revolving boring bar.

Beaman & Smith Co., Providence, R. I.
Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Binsse Machine Co., Newark, N. J.
Fitchburg Machine Works, Fitchburg, Mass.
Fosdick Machine Tool Co., Cincinnati, O.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Lucas Machine Tool Co., Cleveland, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Pratt & Whitney Co., Hartford, Conn.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Warner & Swasey Co., Cleveland, O.

96 **Vertical.** In which the cutting tools are carried on a vertical revolving boring bar.

Betts Machine Co., Wilmington, Del.
Bickford, H., & Co., Lakeport, N. H. *See adv. page 2.*
Brown & Sharpe Mfg. Co., Providence, R. I.
Bullard Machine Tool Co., Bridgeport, Conn.
King Machine Tool Co., Cincinnati, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.

BORING MACHINES, VERTICAL, continued

Prentice Bros. Co., Worcester, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

97 **BORING AND DRILLING MACHINES.** Boring machines which are also adapted to drilling.

American Tool Works Co., Cincinnati, O.
Beaman & Smith Co., Providence, R. I.
Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Bullard Machine Tool Co., Bridgeport, Conn. *See adv. page 14.*
Draper Machine Tool Co., Worcester, Mass.
Exeter Machine Works, Exeter, N. H.
Fay & Scott, Dexter, Me.
Fitchburg Machine Works, Fitchburg, Mass.
Fosdick Machine Tool Co., Cincinnati, O.
Harrington, Edwin, Son & Co., Inc., 1503 Penna. Ave., Philda.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Keystone Machine Tool Works, 1037 Ridge Av., Philda, Pa.
Lucas Machine Tool Co., Cleveland, O.
Nazel Machine Tool Works, 1046 Ridge Ave., Philadelphia, Pa.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Pawling & Harnischfeger, Milwaukee, Wis.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros. Co., Worcester, Mass.
Stow Mfg. Co., Binghamton, N. Y.
Warner & Swasey Co., Cleveland, O.

98 **BORING AND MILLING MACHINES.** Boring machines which are also adapted to milling.

Beaman & Smith, Providence, R. I.
Betts Machine Co., Wilmington, Del.
Fosdick Machine Tool Co., Cincinnati, O.
Hill, Clark & Co., 156 Oliver St., Boston, Mass.
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia.
Lucas Machine Tool Co., Cleveland, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Vanderbeek Tool Works, Hartford, Conn. *See adv. page 27.*

99 **BORING, MILLING AND DRILLING MACHINES.** Boring machines which are also adapted to milling and drilling.

Beaman & Smith, Providence, R. I.
Betts Machine Co., Wilmington, Del.
Binsse Machine Co., Newark, N. J.
Detrick & Harvey Machine Co., Baltimore, Md.
Espen-Lucas Machine Works, Broad & Noble Sts., Philda, Pa.
Fosdick Machine Tool Co., Cincinnati, O.
Hill, Clark & Co., 156 Oliver St., Boston, Mass.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Lucas Machine Tool Co., Cleveland, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*

100 **BORING AND TAPPING MACHINES.** For boring and tapping the pipe ends of globe valves, cocks, packing nuts, etc.

Beaman & Smith, Providence, R. I.
Fosdick Machine Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Warner & Swasey Co., Cleveland, O.

101 **BORING AND TURNING MILLS.** Machines usually having a horizontal rotating table for the work, and stationary tools for boring, facing and turning.

American Tool Works Co., Cincinnati, O.
Baush Machine Tool Co., Springfield, Mass. *See adv. page 12.*
Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Bickford, H., & Co., Lakeport, N. H. *See adv. page 2.*
Bullard Machine Tool Co., Bridgeport, Conn. *See adv. page 14.*
Colburn Machine Tool Co., Franklin, Pa.
King Machine Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Poole, J. Morton, Co., Wilmington, Del.
Pratt & Whitney Co., Hartford, Conn.
Rogers Machine Tool Co., Alfred, N. Y.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Warner & Swasey Co., Cleveland, O.

102 **CENTERING MACHINES.** For drilling and reaming centers in lathe work.

Binghamton Machine Tool Works, Binghamton, N. Y.
Harrington, Edwin, Son & Co., Inc., 1503 Penna. Ave, Philda.
Nazel Machine Tool Works, 1046 Ridge Ave., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Phoenix Mfg. Co., Hartford, Conn.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Rogers Machine Tool Co., Alfred, N. Y.
Whiton, D. E., Machine Co., New London, Conn.
Woodward & Rogers Co., Hartford, Conn.

103 **CHUCKING MACHINES.** See 221, under Turret Lathes.

104 **CHUCKING, BORING AND TURNING MACHINES, AUTOMATIC.** For the automatic production of finished cast-iron work.

American Turret Lathe Mfg. Co., Warren, Pa.
Fay & Scott, Dexter, Me.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.

105 **COUNTERSINKING MACHINES.** For countersinking drilled holes.

Cleveland Punch & Shear Works Co., Cleveland, O.
Detrick & Harvey Machine Co., Baltimore, Md.
Fitchburg Machine Works, Fitchburg, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros. Co., Worcester, Mass.

106 **CUTTING-OFF MACHINES.** For cutting off pieces from commercial bars of iron, steel, or other metal.

Armstrong Bros. Tool Co., 613 Austin Av., Chicago, Ill.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P., Machine Co., Rochester, N. Y.
Diamond Drill & Machine Co., Birdsboro, Pa.
Fitchburg Machine Works, Fitchburg, Mass.
Hurlbut-Rogers Machine Co., South Sudbury, Mass. *See adv. page 7.*
Johnson, I. H., & Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Johnson, Prentice Co., Worcester, Mass.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Nutter, Barnes & Co., Boston, Mass.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Warner & Swasey Co., Cleveland, O.

107 **DRILLING MACHINES.**

108 **Arch Bar.** For drilling the arch bars of railroad car tracks.

Bickford Drill & Tool Co., Cincinnati, O.
Davenport Machine Works, Davenport, Ia.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Montgomery & Co., 105 Fulton St., New York.
Newton Mch. Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pont Co., 136 Liberty St., New York. *See adv. page 63.*
Prentice Bros. Co., Worcester, Mass.

109 **Bench.** Without bases, intended to be set on work benches, etc.

Aurora Tool Works, Aurora, Ind.
Barnes, W. F., & John Co., Rockford, Ill.
Barr, H. G., Worcester, Mass.
Boynton & Plummer, Worcester, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Chapin-Love Machine Co., New Orange, N. J.
Cross & Speirs Machine Co., Waterbury, Conn.
Gardam, William, & Son, 45 Rose St., New York.
Garvin Machine Co., Spring & Varick Sts., New York.
Globe Machine & Stamping Co., Cleveland, O.
Goodell-Pratt Co., Greenfield, Mass.
Hoefer Mfg. Co., Freeport, Ill.
Mutual Machine Co., 25 Wells St., Hartford, Conn.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Pratt & Whitney Co., Hartford, Conn.
Reed, Francis, Co., Worcester, Mass.
Sigourney Tool Co., Hartford, Conn.
Slate, Dwight Machine Co., Hartford, Conn. *See adv. page 57.*
Washburn Shops, Worcester, Mass.
Woodward & Rogers Co., Hartford, Conn.

110 **Bicycle.** Designed for drilling bicycle parts.

Baker Bros., Toledo, O.
Boynton & Plummer, Worcester, Mass.
Chicago Flexible Shaft Co., La Salle Ave. and Ontario St., Chicago, Ill.

DRILLING MACHINES, BICYCLE, continued

Garvin Machine Co., Spring & Varick Sts., New York.
Hoefer Mfg. Co., Freeport, Ill.
Pratt & Whitney Co., Hartford, Conn.
Reed, Francis, Co., Worcester, Mass.
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philda, Pa.
Stow Mfg. Co., Binghamton, N. Y.
Woodward & Rogers Co., Hartford, Conn.

111 **Blacksmiths'.** Usually post machines operated by hand.

Boynton & Plummer, Worcester, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Foos Mfg. Co., Springfield, O.
Potts, H. D., Lancaster, Pa.
Reed, Francis, Co., Worcester, Mass.
Wells Bros. Company, Worcester, Mass.
Whitney Mfg. Co., Hartford, Conn.
Wiley & Russell Mfg. Co., Greenfield, Mass.

112 **Block.** For drilling blocks for bicycle chains.

Pratt & Whitney Co., Hartford, Conn.

113 **Boiler Shell.** For drilling boiler shells, tube sheets, etc.

Aurora Tool Works, Aurora, Ind.
Bickford Drill & Tool Co., Cincinnati, O.
Dallett, Thomas H., Co., York St. & Sedgley Ave., Philda, Pa.
Fitchburg Machine Works, Fitchburg, Mass.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Prentice Bros. Co., Worcester, Mass.

114 ELECTRIC DUPLEX. Duplex boiler shell drill electrically driven.

Dallett, Thomas, H., Co., York St. & Sedgley Av., Philadelphia, Pa. *See adv. page 37.*

115 **Bridge.** For drilling bridge girders, plates, etc.

Bickford Drill & Tool Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Flather, Mark, Planer Co., Nashua, N. H.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros. Co., Worcester, Mass.

116 **Car Buffer.** For drilling car buffers.

Bickford Drill & Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.

117 **Clamp.** Portable drills that can readily be attached to the work.

Boynton & Plummer Co., Worcester, Mass.
Dallett, Thomas H., & Co., York St. & Sedgley Ave., Philda, Pa.
Hurlbut-Armstrong Iron Co., Racine, Wis.
Reed, Francis, Co., Worcester, Mass. *See adv. page 56.*

DRILLING MACHINES, continued

118 **Disk.** See 136, Sensitive Drills.

119 **Double Head.** See also 127, Multiple Spindle Drills.

Fay & Scott, Dexter, Me.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Prentice Bros. Co., Worcester, Mass.
Woodward & Rogers Co., Hartford, Conn.

120 **Friction.** See 136, Sensitive Drills.

121 **Gang.** Having spindles arranged in series. See also 127, Multiple Spindle Drills.

American Tool Works Co., Cincinnati, O.
Aurora Tool Works, Aurora, Ind.
Baker Bros., Toledo, O.
Barnes, B. F., Co., Rockford, Ill.
Bickford Drill & Tool Co., Cincinnati, O. *See adv. page 25.*
Blaisdell, P., & Co., Worcester, Mass.
Cleveland Punch & Shear Works Co., Cleveland, O.
Fitchburg Machine Works, Fitchburg, Mass.
Flather, Mark, Planer Co., Nashua, N. H.
Foote, Burt & Co., Cleveland, O.
Garvin Machine Co., Spring & Varick Sts., New York.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros. Co., Worcester, Mass.
Slate, Dwight, Mch. Co., Hartford, Conn.
Vanderbeek Tool Works, Hartford, Conn.

122 **Gun Barrel.** For drilling long holes such as are required in guns, hollow shafting, etc.

Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Pratt & Whitney Co., Hartford, Conn.
Whitney Mfg. Co., Hartford, Conn.

123 **Heater.** For drilling radiators.

Bickford Drill & Tool Co., Cincinnati, O.
Blaisdell, P., & Co., Worcester, Mass.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pratt & Whitney Co., Hartford, Conn.

124 **Horizontal.** Having the drilling spindle horizontal instead of vertical.

Barnes, B. F., Co., Rockford, Ill.
Barnes, W. F., & John Co., Rockford, Ill.
Beaman & Smith Co., Providence, R. I.
Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Blaisdell, P., & Co., Worcester, Mass.
Boynton & Plummer Co., Worcester, Mass. *See adv. page 23.*
Detrick & Harvey Machine Co., Baltimore, Md.
Fosdick Machine Tool Co., Cincinnati, O. *See adv. page 67.*

DRILLING MACHINES, HORIZONTAL, continued

Garvin Machine Co., Spring & Varick Sts., New York.
Keystone Machine Tool Wks., 1037 Ridge Ave., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pawling & Harnischfeger, Milwaukee, Wis.
Sellers, Wm., & Co., 1600 Hamilton St., Philadelphia, Pa.
Slate, Dwight Machine Co., Hartford, Conn.
Warner & Swasey Co., Cleveland, O.

125 **Lever.** See 140, Upright Drills.

126 **Locomotive Frame.** For drilling locomotive frames.

Bickford Drill & Tool Co., Cincinnati, O.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Newton Machine Tool Works, 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Prentice Bros. Co., Worcester, Mass.

127 **Multiple Spindle.** Having more than one drilling spindle.

Ajax Mfg. Co., Cleveland, O.
American Tool Works Co., Cincinnati, O.
Andrew, M. L., & Co., 118 W. 2d St., Cincinnati, O.
Aurora Tool Works, Aurora, Ind.
Baker Bros., Toledo, O.
Barnes, W. F., & John, Co., Rockford, Ill.
Barnes, B. F., Co., Rockford, Ill.
Barr, H. G., Worcester, Mass. *See adv. page 6.*
Baush Machine Tool Co., Springfield, Mass. *See adv. page 12.*
Bickford Drill & Tool Co., Cincinnati, O. *See adv. page 25.*
Blaisdell, P., & Co., Worcester, Mass.
Chapin-Love Machine Co., New Orange, N. J.
Cleveland Punch & Shear Works Co., Cleveland, O.
Davis, W. P., Machine Co., Rochester, N. Y.
Flather, Mark, Planer Co., Nashua, N. H.
Foote, Burt & Co., Cleveland, O.
Fox Machine Co., Grand Rapids, Mich.
Gardam, William, & Son, 45 Rose St., New York.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Garvin Machine Co., Spring & Varick Sts., New York.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Hoefer Mfg. Co., Freeport, Ill.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Moline Tool Co., Moline, Ill.
National Automatic Tool Co., Dayton, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Norton & Jones Machine Tool Works, Plainville, Conn.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Prentice Bros. Co., Worcester, Mass.
Reed, Francis, Co., Worcester, Mass.
Reserve Press Co., Cleveland, O.
Sellers, Wm., & Co., 1600 Hamilton St., Philadelphia, Pa.
Shuster, F. B., Co., New Haven, Conn.

DRILLING MACHINES, MULTIPLE SPINDLE, continued

Sigourney Tool Co., Hartford, Conn.
Slate, Dwight, Machine Co., Hartford, Conn. *See adv. page 57.*
Vanderbeek Tool Works, Hartford, Conn.
Williams, White & Co., Moline Ill.
Woodward & Rogers Co., Hartford, Conn.

128 **Overhead Traveling.** Arranged to be shifted on an overhead track.

Bickford Drill & Tool Co., Cincinnati, O.

129 **Portable.** Machines easily transported to the work.

Chicago Flexible Shaft Co., La Salle Ave. and Ontario St., Chicago, Ill.
Dallett, Thomas H., Co., York St. & Sedgley Ave., Philda, Pa. *See adv. page 37.*
Nazel Machine Tool Works, 1046 Ridge Ave., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Prentice Bros. Co., Worcester, Mass.
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philda, Pa.
Stow Mfg. Co., Binghamton, N. Y.

130 ELECTRIC. Portable drill driven by electricity.

Dallett, Thomas H., Co., York St. & Sedgley Ave., Philda, Pa. *See adv. page 37.*
Hisey-Wolf Machine Co., Cincinnati, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Patterson Tool & Supply Co., Dayton, O.
Reed, Francis, Co., Worcester, Mass.
Sprague Electric Co., 527 West 34th St., New York.
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philda, Pa.
Stow Mfg. Co., Binghamton, N. Y.

131 PNEUMATIC. Portable drills operated by compressed air.

Columbus Pneumatic Tool, Columbus, O.
Haeseler-Ingersoll Pneumatic Tool Co., 26 Cortlandt St., N. Y.
Philadelphia Pneumatic Tool Co., 21st St. & Allegheny Ave., Philadelphia, Pa.
Rand Drill Co., 128 Broadway, New York.

132 **Post.** Without bases, intended to be fastened to posts or the walls of a shop.

Bickford Drill & Tool Co., Cincinnati, O.
Box, Alfred, & Co., Front, Poplar and Canal Sts., Philda, Pa.
Boynton & Plummer, Worcester, Mass. *See adv. page 23.*
Champion Blower & Forge Co., Lancaster, Pa.
Cleveland Punch & Shear Works Co., Cleveland, O.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Kane & Roach, Syracuse, N. Y.
Prentice Bros. Co., Worcester, Mass.
Sellers, Wm., & Co., Inc., Hamilton St., Philadelphia, Pa.
Snyder, J. E., & Son, Worcester, Mass.
Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

DRILLING MACHINES, POST, continued

133 **Radial.** Having a radial arm swinging about a vertical column and carrying a drilling spindle which can be swung through the arc of a circle and traversed on the arm.

American Tool Works Co., Cincinnati, O.
Aurora Tool Works, Aurora, Ind.
Baush Machine Tool Co., Springfield, Mass. *See adv. page 12.*
Bickford Drill & Tool Co., Cincinnati, O. *See adv. page 25.*
Clark, Jas., Jr., & Co., Louisville, Ky.
Cleveland Punch & Shear Works Co., Cleveland, O.
Dreses Machine Tool Co., Cincinnati, O. *See adv. page 26.*
Fitchburg Machine Works, Fitchburg, Mass.
Fosdick Machine Tool Co., Cincinnati, O. *See adv. page 67.*
Gang, Wm. E., Co., Cincinnati, O.
Hamilton Machine Tool Co., Hamilton, O.
Harrington, Edwin, Son & Co., Inc., 1503 Penn Ave., Philda.
Hill, Clark & Co., 156 Oliver St., Boston, Mass.
Mueller Machine Tool Co., 218 W. Pearl St., Cincinnati, O. *See adv. page 6.*
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Prentice Bros. Co., Worcester, Mass.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., 1600 Hamilton St., Philadelphia, Pa.
Western Machine Tool Works, Holland, Mich.

134 **Rail.** For drilling holes in the ends of rails for fish plate bolts.

Flather, Mark, Planer Co., Nashua, N. H.
Lowell Wrench Co., Worcester, Mass.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pratt & Whitney Co., Hartford, Conn.
Sellers, Wm., & Co., 1600 Hamilton St., Philadelphia, Pa.
Stow Mfg. Co., Binghamton, N. Y.

135 **Ratchet.** Having a ratchet adjustment.

Lowell Wrench Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*

136 **Sensitive and Friction.** Having a belt or other friction driving mechanism and usually a lever hand feed.

American Tool Works Co., Cincinnati, O.
American Watch Tool Co., Waltham, Mass.
Atlas Machine Tool & Die Works, Cincinnati, O.
Aurora Tool Works, Aurora, Ind.
Barnes, B. F., Co., Rockford, Ill.
Barnes, W. F., & John Co., Rockford, Ill. *See adv. page 26.*
Barr, H. G., Worcester, Mass.
Buescher Mfg. Co., Elkhart, Ind.
Burke Machinery Co., Cleveland, O.
Challenge Machine Co., Belmont Av. & Viola Sts., Philadelphia, Pa. *See adv. page 33.*
Chapin-Love Machine Co., New Orange, N. J.
Clark, Jas., Jr., & Co., Louisville, Ky.
Davis, W. P., Machine Co., Rochester, N. Y.
Foote, Burt & Co., Cleveland, O.
Gardam, William, & Son, 45 Rose St., New York.

DRILLING MACHINES, SENSITIVE AND FRICTION, continued

Hamilton Machine Tool Co., Hamilton, O.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Hoefer Mfg. Co., Freeport, Ill.
Knecht Bros. Co., Cincinnati, O. *See adv. page 66.*
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
National Separator & Machine Co., Concord, N. H. *See adv. page 40.*
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Norton & Jones Machine Tool Works, Plainville, Conn.
Patterson Tool & Supply Co., Dayton, O.
Pratt & Whitney Co., Hartford, Conn.
Reed, Francis, Co., Worcester, Mass.
Rhodes Mfg. Co., Columbus, O.
Rogers Machine Tool Co., Alfred, N. Y.
Sigourney Tool Co., Hartford, Conn.
Slate, Dwight, Machine Co., Hartford, Conn.
Vanderbeek Tool Works, Hartford, Conn.
Washburn Shops, Worcester, Mass.
Woodward & Rogers Co., Hartford, Conn.
Young, J. W., cor. Jackson and Clinton Sts., Chicago, Ill.

137 **Suspension.** Arranged to be secured to the overhead structure of a building.

Bickford Drill & Tool Co., Cincinnati, O. *See adv. page 25.*
Boynton & Plummer Co., Worcester, Mass.
Cleveland Punch & Shear Works Co., Cleveland, O.
New Haven Mfg. Co., New Haven, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Prentice Bros. Co., Worcester, Mass.
Reed, Francis, Co., Worcester, Mass.

138 **Swing.** See also 140, Upright Drills.

Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Niles-Bement-Pond Co., 136 Liberty St., New York.
Prentice Bros. Co., Worcester, Mass.
Sibley Machine Tool Co., South Bend, Ind.

139 **Turret.** Having multiple spindles arranged in a vertical turret.

Pratt & Whitney Co., Hartford, Conn.
Quint, A. D., Hartford, Conn.
Reed, Francis, Co., Worcester, Mass.
Vanderbeek Tool Works, Hartford, Conn. *See adv. page 27.*

140 **Upright or Vertical.** Having the drilling spindle in a vertical position.

American Tool Works Co., Cincinnati, O.
Aurora Tool Works, Aurora, Ind.
Baker Bros., Toledo, O.
Barnes, B. F., Co., Rockford, Ill.
Barnes, W. F., & John, Co., Rockford, Ill. *See adv. page 26.*
Barr, H. G., Worcester, Mass. *See adv. page 6.*
Beaman & Smith Co., Providence, R. I.
Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*

DRILLING MACHINES, UPRIGHT, continued

Buffalo Forge Co., Buffalo, N. Y.
Cincinnati Machine Tool Co., Cincinnati, O.
Cross & Speirs Machine Co., Waterbury, Conn.
Davis, W. P., Machine Co., Rochester, N. Y.
Exeter Machine Works, Exeter, N. H.
Fitchburg Machine Works, Fitchburg, Mass.
Fosdick Machine Tool Co., Cincinnati, O. *See adv. page 67.*
Garvin Machine Co., Spring & Varick Sts., New York.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Hamilton Machine Tool Co., Hamilton, O.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Hoefer Mfg. Co., Freeport, Ill.
Kane & Roach, Syracuse, N. Y.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
New Haven Mfg. Co., New Haven, Conn.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Olmsted, L. H., Hasbrouck Heights, N. J.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros. Co., Worcester, Mass.
Putnam Machine Co., Fitchburg, Mass.
Reed, Francis, Co., Worcester, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Sibley Machine Tool Co., South Bend, Ind.
Silver Mfg. Co., Salem, O.
Slate, Dwight Machine Co., Hartford, Conn.
Snyder, J. E., & Son, Worcester, Mass.
Vanderbeek Tool Works, Hartford, Conn. *See adv. page 27.*
Washburn Shops, Worcester, Mass.
Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

141 **GEAR CUTTING MACHINES.** A special form of milling machine adapted to cutting the teeth of gears.

Becker-Brainard Milling Machine Co., Hyde Park, Mass. *See adv. page 29.*
Bickford Drill & Tool Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Bultman, F. H., & Co., 35 W. Center St., Cleveland, O.
Fellows Gear Shaper Co., Springfield, Vt.
Garvin Machine Co., Spring & Varick Sts., New York.
Gleason Works, Rochester, N. Y.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Kentucky Gear & Machine Co., Louisville, Ky.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Pratt & Whitney Co., Hartford, Conn.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Shepard Lathe Co., Cincinnati, O.
Slate, Dwight Machine Co., Hartford, Conn. *See adv. page 57.*
Sloan & Chace Mfg. Co., Ltd., Newark, N. J.
Waltham Machine Works, Waltham, Mass.
Whiton, D. E., Machine Co., New London, Conn.

142 **GRADUATING MACHINES.** For graduating cylindrical parts.

Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Springfield Machine Tool Co., Springfield, O.

143 **GRINDING MACHINES.**

144 **Automatic.** For the automatic production of plane and circular surfaces; for automatically grinding knives, etc.

Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Niles-Bement-Pond Co., 136 Liberty St., New York.
Norton Emery Wheel Co., Worcester, Mass.
Nutter, Barnes & Co., Boston, Mass.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*

145 **Bench.** Without base or legs; to be set on work benches or other suitable supports.

American Emery Wheel Works, Providence, R. I.
American Twist Drill Co., Laconia, N. H.
Anchor Machine Works, Grand Rapids, Mich.
Blount, J. G., & Co., Everett, Mass. *See adv. page 7.*
Bridgeport Safety Emery Wheel Co., Bridgeport, Ct. *See adv. page 32.*
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Buffalo Emery Wheel Co., Buffalo, N. Y.
Builders Iron Foundry, Providence, R. I.
Capital City Machine Works, Columbus, O.
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa. *See adv. page 33.*
Dean, H. C., Machine Co., Fitchburg, Mass.
Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Electric Emery Wheel Co., Newark, N. J.
Garvin Machine Co., Spring & Varick Sts., New York.
Goodell-Pratt Co., Greenfield, Mass.
Grant Mfg. & Mch. Co., Bridgeport, Conn.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass.
Montgomery & Co., 105-107 Fulton St., New York.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Northern Electrical Mfg. Co., Madison, Wis.
Norton Emery Wheel Co., Worcester, Mass.
Norton Grinding Co., Worcester, Mass.
Patterson Tool & Supply Co., Dayton, O.
Pratt & Whitney Co., Hartford, Conn.
Ransom Mfg. Co., Oshkosh, Wis.
Rogers, Samuel C., & Co., Buffalo, N. Y.
Safety Emery Wheel Co., Springfield, O.
St. Louis Machine Tool Co., St. Louis, Mo.
Spicer Mfg. Co., New Philadelphia, O.
Storey Motor & Electric Co., Inc., Harrison, N. J.
Tucker Machine Co., Cincinnati, O. *See adv. page 68.*
Valley City Machine Works, Grand Rapids, Mich.
Vitrified Wheel Co., Westfield, Mass.
Washburn Shops, Worcester, Mass.
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*

146 **Car Box.** For grinding off the ends of car journal boxes so that the covers can be tightly fitted.

Diamond Machine Co., Providence, R. I.

GRINDING MACHINES, CAR BOX, continued

Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Tucker Machine Co., Cincinnati, O.

147 **Car Brass.** For smoothing the brasses for railway car journals.

Diamond Machine Co., Providence, R. I.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*
Tanite Co., Stroudsburg, Pa.

148 **Car Wheel.** For grinding the periphery of car wheels to give them smooth and accurate treads.

Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*

149 **Center.** For grinding the centers of lathes, universal grinding machines, etc.

Barker, Wm., & Co., Cincinnati, O.
Browning Mfg. Co., Milwaukee, Wis.
Clark, Jas., Jr., & Co., Louisville, Ky.
Dallett, Thomas H., Co., York St. & Sedgley Ave., Philda, Pa. *See adv. page 37.*
Diamond Machine Co., Providence, R. I.
Dock, Herman, 905 Carlisle St., Philadelphia, Pa.
Heald Machine Co., Worcester, Mass. *See adv. page 32.*
Hisey Wolf Machine Co., Cincinnati, O.
Leland & Faulconer Mfg. Co., Detroit, Mich.
Mueller Machine Tool Co., 216 W. Pearl St., Cincinnati, O. *See adv. page 6.*
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pedrick & Ayer Co., Plainfield, N. J.
Pratt & Whitney Co., Hartford, Conn.
Rogers, Samuel C., & Co., Buffalo, N. Y.
Russell, R. M., Binghamton, N. Y.
Slate, Dwight, Machine Co., Hartford, Conn. *See adv. page 57.*
Stow Mfg. Co., Binghamton, N. Y.
Trump Bros. Machine Co., Wilmington, Del.
Woodward Governor Co., Rockford, Ill.

150 **Chaser.** For grinding machine dies.

Modern Tool Co., Erie, Pa. *See adv. page 58.*
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*

151 **Cock.** For grinding in the plugs to cocks, using oil and emery or cutting material.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Foote, Burt & Co., Cleveland, O.
Warner & Swasey Co., Cleveland, O.
Windsor Machine Co., Windsor, Vt. *See adv. page 20.*

152 **Crank Pin.** For grinding locomotive crank pins.

Ball Mfg. Co., Stamford, Conn.

GRINDING MACHINES, continued

153 **Cutter and Reamer.** For grinding milling machine cutters, reamers, etc.

Adams Co., Dubuque, Ia.
American Watch Tool Co., Waltham, Mass.
Anderson Tool Co., Anderson, Ind.
Automatic Machine Co., Greenfield, Mass. *See adv. page 5.*
Barr, H. G., Worcester, Mass.
Becker-Brainard Milling Machine Co., Hyde Park, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa.
Cincinnati Milling Machine Co., Cincinnati, O.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Gould & Eberhardt, Newark, N. J.
Greenfield Machine Co., Greenfield, Mass.
Heald Machine Co., Worcester, Mass. *See adv. page 32.*
Hisey-Wolf Machine Co., Cincinnati, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Norton Emery Wheel Co., Worcester, Mass.
Oesterlein Machine Co., Cincinnati, O.
Pratt & Whitney Co., Hartford, Conn.
Pryibil, P., 512 West 41st St., New York.
Rivett-Dock Co., Brighton, Boston, Mass. *See adv. page 53.*
Russell, R. M., Binghamton, N. Y.
Slate, Dwight Machine Co., Hartford, Conn.
Wells Bros. Company, Greenfield, Mass.
Woodward & Rogers Co., Hartford, Conn.

154 **Disk.** For grinding plane surfaces; steel disks covered with emery cloth used instead of emery wheels.

Bayldon Machine & Tool Co., Jersey City, N. J.
Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.
Collis Wood & Metal Mfg. Co., Dubuque, Ia.
Dodge Mfg. Co., Mishawaka, Ind.
Heald Machine Co., Worcester, Mass.
Iroquois Machine Co., 150 Nassau St., New York.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Ransom Mfg. Co., Oshkosh, Wis.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Safety Emery Wheel Co., Springfield, O.
Storey Motor & Electric Co., Inc., Harrison, N. J.
Stow Mfg. Co., Binghamton, N. Y.

155 **Drill.** For grinding twist drills.

Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa.
Heald Machine Co., Worcester, Mass. *See adv. page 32.*
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Standard Tool Co., Cleveland, O.
Washburn Shops, Worcester, Mass.
Wilmarth & Morman Co., Grand Rapids, Mich.

156 **Edge.** See 158, Face Grinders.

GRINDING MACHINES, continued

157 **End.** For grinding the ends of long pieces.

Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*

158 **Face.** For producing plane surfaces on the sides of long pieces.

Blake & Johnson, Waterbury, Conn.
Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa.
Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Iroquois Machine Co., 150 Nassau St., New York.
Northampton Emery Wheel Co., Leeds, Mass.
Ransom Mfg. Co., Oshkosh, Wis.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*
Stow Mfg. Co., Binghamton, N. Y.

159 **Flexible Shaft.** Driven by a flexible shaft which enables the operator to follow the shape of a heavy casting with the wheel.

Stow Flexible Shaft Co., 26th and Callowhill Sts., Philda, Pa.
Stow Mfg. Co., Binghamton, N. Y.

160 **Floor.** Having floor bases.

American Twist Drill Co., Laconia, N. H.
Born, J. C., & Bro., Machine Works, Belleville, Ill.
Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Capital City Machine Works, Columbus, O.
Electric Emery Wheel Co., Newark, N. J.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass.
Iroquois Machine Co., 150 Nassau St., New York.
Norton Grinding Co., Worcester, Mass.
Patterson Tool & Supply Co., Dayton, O.
Ransom Mfg. Co., Oshkosh, Wis.
Slate, Dwight, Machine Co., Hartford, Conn.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*
Storey Motor & Electric Co., Inc., Harrison, N. J.
Valley City Machine Co., Grand Rapids, Mich.
Washburn Shops, Worcester, Mass.

161 **Internal.** See 172, Universal Grinders.

162 **Knife.** For grinding planer knives, revolving cutter knives, leather cutters, etc.

American Twist Drill Co., Laconia, N. H.
Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Carver Cotton Gin Co., East Bridgewater, Mass.
Defiance Machine Works, Defiance, O.
Diamond Machine Co., Providence, R. I.
Gallagher Mfg. Co., Lynn, Mass.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Northampton Emery Wheel Co., Leeds, Mass.
Robertson Mfg. Co., 1451 Niagara St., Buffalo, N. Y.
Rogers, Samuel C., & Co., Buffalo, N. Y.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*

GRINDING MACHINES, KNIFE, continued

Sterling Emery Wheel Mfg. Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
White, John A., Co., Dover, N. H.

163 **Lawn Mower.** For sharpening the blades of lawn mowers.

Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35.*
Zacharias, E. R., Asbury Park, N. J.

164 **Plain.** See 145, and 160, Bench and Floor Grinders.

165 **Plow Share.** For smoothing castings, especially parts of plows.

Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Diamond Machine Co., Providence, R. I.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35*
Tucker Machine Co., Cincinnati, O.
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*

166 **Roll.** For grinding calender rolls, etc.

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn.
Diamond Machine Co., Providence, R. I.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda.
Poole, J. Morton, Co., Wilmington, Del.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35*
Withey-Wright Co., Reed City, Mich.

167 **Saw.** For grinding cold saws.

Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Espen-Lucas Machine Works, Broad and Noble Sts., Philda, Pa.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.
Nutter, Barnes & Co., 366 Atlantic Ave., Boston, Mass.
Vandyck, J. R., Co., 8 Dey St., New York.

168 **Stove Plate.** For smoothing the castings of stoves.

Northampton Emery Wheel Co., Leeds, Mass.
Ransom Mfg. Co., Oshkosh, Wis.
Tanite Co., Stroudsburg, Pa.
Tucker Machine Co., Cincinnati, O.
Washburn Shops, Worcester, Mass.

169 **Surface.** For producing plane surfaces.

American Emery Wheel Works, Providence, R. I.
American Watch Tool Co., Waltham, Mass.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Blake & Johnson, Waterbury, Conn.
Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Brown & Sharp Mfg. Co., Providence, R. I. *See adv. page 11.*
Capital City Machine Works, Columbus, O.
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa.
Diamond Machine Co., Providence, R. I.

GRINDING MACHINES, SURFACE, continued

Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Hisey-Wolf Machine Co., Cincinnati, O.
Iroquois Machine Co., 150 Nassau St., New York.
Manville, E. J., Machine Co., Waterbury, Conn.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Ransom Mfg. Co., Oshkosh, Wis.
Safety Emery Wheel Co., Springfield, O.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Springfield Mfg. Co., Bridgeport, Ct. *See adv. pages 34-35*
Tanite Co., Stroudsburg, Pa.
Walker, O. S., & Co., Worcester, Mass. *See adv. page 3.*
Woodward & Rogers Co., Hartford, Conn.

170 **Swing Frame.** For grinding and smoothing castings that are too large to be turned around and held to a stationary wheel.

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn.
Diamond Mfg. Co., Providence, R. I.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Sterling Emery Wheel Mfg. Co., Tiffin, O.

171 **Tool.** For grinding lathe and planer tools.

Allen, E. F., & Co., Auburn, N. Y.
Automatic Machine Co., Greenfield, Mass.
Barnes, B. F., Co., Rockford, Ill.
Barnes, W. F., & John Co., Rockford, Ill.
Barr, H. G., Worcester, Mass.
Bienenstok, Edgar A., & Co., 715 Locust St., St. Louis, Mo.
Blake & Johnson, Waterbury, Conn.
Blount, J. G., & Co., Everett, Mass.
Bridgeport Safety Emery Wheel Co., Bridgeport, Conn.
Brown & Sharp Mfg. Co., Providence, R. I. *See adv. page 11.*
Cady, C. N., Co., Canistota, N. Y.
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa.
Chapman, H. L., Marcellus, Mich.
Clark, Jas., Jr., & Co., Louisville, Ky.
Dean, H. C., Machine Co., Fitchburg, Mass.
Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Gisholt Machine Co., Madison, Wis.
Goddard Machine Co., Holyoke, Mass.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Keystone Machine Tool Works, 1037 Ridge Av., Philda, Pa.
Leland & Faulconer Mfg. Co., Detroit, Mich.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Novelty Mfg. Co., Omaha, Neb.
Oesterlein Machine Co., Cincinnati, O.
Patterson Tool & Supply Co., Dayton, O.
Ransom Mfg. Co., Oshkosh, Wis.
Richard Mfg. Co., Bloomsburg, Pa.
Robertson Mfg. Co., 1451 Niagara St., Buffalo, N. Y.

GRINDING MACHINES, TOOL, continued

Rogers, Samuel C., & Co., Buffalo, N. Y.
Safety Emery Wheel Co., Springfield, O.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Slate, Dwight Machine Co., Hartford, Conn.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Stark Tool Co., Waltham, Mass.
Sterling Emery Wheel Mfg. Co., Tiffin, O.
Tucker Machine Co., Cincinnati, O. *See adv. page 68.*
Valley City Machine Works, Grand Rapids, Mich.
Vitrified Wheel Co., Westfield, Mass.
Walker, O. S., & Co., Worcester, Mass. *See adv. page 3.*
Webster & Perks Tool Co., Springfield, Mass. *See adv. page 55.*
Whitney Mfg. Co., Hartford, Conn.

172 **Universal.** Adapted to a great variety of work and with attachments for internal grinding.

American Watch Tool Co., Waltham, Mass.
Anderson Tool Co., Anderson, Ind.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa. *See adv. page 33.*
Grant Mfg. & Mch. Co., Bridgeport, Conn.
Greenfield Machine Co., Greenfield, Mass.
Hisey-Wolf Machine Co., Cincinnati, O.
Iroquois Machine Co., 150 Nassau St., New York.
Landis Tool Co., Waynesboro, Pa. *See adv. page 69.*
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Norton Emery Wheel Co., Worcester, Mass.
Ransom Mfg. Co., Oshkosh, Wis.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Sterling Emery Wheel Mfg. Co., Tiffin, O.

173 **GRINDER HEADS OR FRAMES.** For emery grinders or grindstones.

American Watch Tool Co., Waltham, Mass.
Builders Iron Foundry, Providence, R. I.
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa.
Dean, H. C., Machine Co., Fitchburg, Mass.
Diamond Machine Co., Providence, R. I.
Goodell-Pratt Co., Greenfield, Mass.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Ransom Mfg. Co., Oshkosh, Wis.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Tucker Machine Co., Cincinnati, O.

174 **GRINDSTONE TRUING DEVICE.**

Brown & Sharpe Mfg. Co., Providence, R. I.
Niles-Bement-Pond Co., 136 Liberty St., New York.

175 **GRINDSTONES.** Abrasive wheels made of stone.

Atlantic Grindstone Co., Providence, R. I.
Cleveland Stone Co., Cleveland, O.
Grafton Stone Co., Elyria, O.
Independent Stone Co., Cuyahoga Bldg., Cleveland, O.

GRINDSTONES, continued

McCroden, John, & Co., 33 West St., New York.
Marietta Stone Co., Marietta, Ohio.
Mussey Stone Co., Elyria, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Ohio Quarries Co., 190 Euclid Ave., Cleveland, O.
Pike Mfg. Co., 151 Chambers St., New York.
Wallace Co., Port Austin, Mich.

176 **GRINDSTONE FRAMES.** For holding grindstones.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Defiance Machine Works, Defiance, O.
Grabo, E. O., 182 Centre St., New York.
Hamilton Machine Tool Co., Hamilton, O.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Hoppen, J. E., 508 Pearl St., New York.
Nator, A., & Co., Cold Spring, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Poorman Mfg. Co., Piqua, O.

177 **KEY DUPLICATING MACHINES.** For duplicating flat or corrugated latch keys.

Builders' Iron Foundry, Providence, R. I.

178 **KEY SEATING MACHINES.** For cutting keyways in hubs, or holes in pulleys, gears, etc.

Baker Bros., Toledo, O.
Beaman & Smith Co., Providence, R. I.
Bridgeford, Chas., Rochester, N. Y.
Burr, John T., & Sons, Kent Ave. and S. 6th St., Brooklyn, N Y.
Chattanooga Machinery Co., Chattanooga, Tenn.
Crompton & Knowles Loom Works, Worcester, Mass.
Davis, W. P., Machine Co., Rochester, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda, Pa.
Hill Tool Co., Anderson, Ind.
Lapointe Machine Tool Co., 32 Atlantic Av., Boston, Mass.
Mitts & Merrill, Saginaw, Mich.
Morton Mfg. Co., Muskegon Heights, Mich.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Whitney Mfg. Co., Hartford, Conn.

179 **Portable.** For cutting keyways in shafting in position.

Burr, John T., & Sons, Kent Ave. & So. 6th Sts., Brooklyn, N.Y.
Mercury Machine Co., 1328 Olive St., Philadelphia, Pa.
Pedrick & Ayer Co., Plainfield, N. J.

180 **LATHE ATTACHMENTS.**

American Tool Works Co., Cincinnati, O.
Bradford Mche. Tool Co., Cincinnati, O.
Curtis & Curtis Co., Bridgeport, Conn.
Fay & Scott, Dexter, Me.
Hamilton Machine Tool Co., Hamilton, O.
Hendey Mch. Co., Torrington, Conn.

LATHE ATTACHMENTS, continued

Ideal Machine Co., Portland, Conn.
Massachusetts Tool Co., Greenfield, Mass.
National Machine Tool Co., Cincinnati, O.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Prentice Bros. Co., Worcester, Mass.
Russell, R. M., Binghamton, N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 20.*
Shepard Lathe Co., Cincinnati, O.
Skinner Chuck Co., New Britain, Conn.
Young, W. C., Mfg. Co., Worcester, Mass.

181 LATHES.

182 Axle. For turning railway car axles.

Bradford Mch. Tool Co., Cincinnati, O. *See adv. page 19.*
Bridgeford, Chas., Rochester, N. Y.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

183 Bench. Small lathes with short legs generally used for precision work, model making, or jewelers' use.

Adams Brothers, Providence, R. I.
American Watch Tool Co., Waltham, Mass.
Ames, B. C., & Co., Waltham, Mass.
Automatic Machine Co., Greenfield, Mass. *See adv. page 5.*
Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Blount, J. G., & Co., Everett, Mass.
Bosworth, E. B., Warren, R. I.
Carroll, A. V., Machine Works, Williamsburg, O.
Cavagnaro, John J., 211 Centre St., New York.
Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Faneuil Watch Tool Co., Brighton, Mass. *See adv. page 53.*
Fay & Scott, Dexter, Me.
Fenn-Sadler Machine Co., Hartford, Conn.
Garvin Mch. Co., Spring & Varick Sts., New York.
Grabo, E. O., 182 Centre St., New York. *See adv. page 56.*
Johnson, E. E., Worcester, Mass.
Mann, Chas. A., Providence, R. I.
Manville Bros. Co., Waterbury, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Moseley Lathe Co., Elgin, Ill.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Putnam Machine Co., Fitchburg, Mass.
Reed, F. E., Co., Worcester, Mass.
Robbins, L., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 20.*
Shepard Lathe Co., Cincinnati, O.
Spencer, J. E., Bridgeport, Conn.
Stark Tool Co., Waltham, Mass. *See adv. page 72.*
Stockbridge Mch. Co., Worcester, Mass. *See adv. page 22.*
Waltham Machine Works, Waltham, Mass.
Waltham Watch Tool Co., Springfield, Mass. *See adv. page 18.*
Washburn Shops, Worcester Mass.
Young, W. C., Mfg. Co., Worcester, Mass. *See adv. page 27.*

LATHES, continued

184 **Bolt.** For turning and threading bolts, studs, and similar small work.

American Tool Works Co., Cincinnati, O.
Blaisdell, P., & Co., Worcester, Mass.
Draper Machine Tool Co., Worcester, Mass.
Fay & Scott, Dexter, Me.
Flather & Co., Nashua, N. H.
Hamilton Machine Tool Co., Hamilton, O.
Harrington, Edwin, Son & Co., Inc., 1503 Penn, Ave., Philda, Pa.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Jones & Lamson Machine Co., Springfield, Vt. *See adv. page 16.*
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Perkins, F. S., Co., Lowell, Mass.
Prentice Bros. Co., Worcester, Mass.
Reed, F. E., Co., Worcester, Mass.
Young, W. C., Mfg. Co., Worcester, Mass.

185 **Boring.** For boring cylinders and similar work.

Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Blaisdell, P., & Co., Worcester, Mass.
Harrington, Edwin, Son & Co., Inc., 1503 Penn. Ave., Philda, Pa.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
New Haven Mfg. Co., New Haven, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Springfield Machine Tool Co., Springfield, O.
Streit, A., Machine Co., Cincinnati, O.

186 **Brass Workers'.** For turning articles made of brass, copper, britannia or similar material which can be easily turned.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
American Tool Works Co., Cincinnati, O.
Bardons & Oliver, Cleveland, O.
Blount, J. G., & Co., Everett, Mass.
Buescher Mfg. Co., Elkhart, Ind.
Crescent Machine Co., Detroit, Mich.
Cross & Speirs Machine Co., Waterbury, Conn.
Dreses Mch. Tool Co., Cincinnati, O.
Gage Machine Works, Waterford, N. Y.
Garvin Machine Co., Spring & Varick Sts., New York.
Grabo, E. O., 182 Centre St., New York.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Pryibil, P., 512 West 41st St., New York.
Putnam Machine Co., Fitchburg, Mass.
Resek Machine Tool Co., Cleveland, O.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Springfield Mch. Tool Co., Springfield, O. *See. adv. page 23.*
Warner & Swasey Co., Cleveland O.
Windsor Machine Co., Windsor, Vt. *See adv. page 20.*

LATHES, continued

187 **Buffing.** See 208, Polishing Lathes.

188 **Chucking.** See 221, under Turret Lathes.

189 **Crank Shaft.** For turning solid forged cranks.

Hill Tool Co., Anderson, Ind.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.

190 **Cutting-Off.** For cutting off bars of steel, iron, etc.

Blaisdell, P., & Co., Worcester, Mass.
Davis, W. P., Machine Co., Rochester, N. Y.
Hurlburt-Rogers Mch. Co., S. Sudbury, Mass. *See adv. page 7.*
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Putnam Machine Co., Fitchburg, Mass.
Warner & Swasey Co., Cleveland, O.

191 **Die Reaming.** For reaming holes in iron dies.

Morgan Construction Co., Worcester, Mass.

192 **Double Spindle.** Having two working spindles and two tail centers so located that large and small work can be advantageously handled in the same machine.

McCabe, J. J., 14 Dey St., New York.

193 **Drilling.** Specially designed for accurate drilling.

Blaisdell, P., & Co., Worcester, Mass.
Blount, J. G., & Co., Everett, Mass.
Cross & Speirs Machine Co., Waterbury, Conn.
Fay & Scott, Dexter, Me.
Harrington, Edwin, Son & Co., Inc., 1503 Penn Ave., Philda.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Putnam Machine Co., Fitchburg, Mass.
Stockbridge Mch. Co., Worcester, Mass.
Young, W. C., Mfg. Co., Worcester, Mass.

194 **Driving Wheel.** For turning driving wheels of locomotives, steel tired car wheels, etc.

Betts Machine Co., Wilmington, Del.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

195 **Engine.** See 212, Screw Cutting Lathes.

196 **Extension.** Provided with bed that can be lengthened or shortened. When bed is extended the swing is increased for face-plate work.

Harrington, Edwin, Son & Co., Inc., 1503 Penn Ave., Philda.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Pryibil, P., 512 West 41st St., New York.
Putnam Machine Co., Fitchburg, Mass.

LATHES, EXTENSION, continued

Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

197 **Facing.** For facing plane surfaces on pieces held in a chuck.

Blaisdell, P., & Co., Worcester, Mass.
Harrington, E., Son & Co., Inc., 1503 Penn Ave., Philadelphia.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

198 **Foot.** Operated by foot power.

Automatic Machine Co., Greenfield, Mass.
Barnes, B. F., Co., Rockford, Ill.
Barnes, W. F. & John, Co., Rockford, Ill. *See adv. page 26.*
Carroll, A. V., Machine Works, Williamsburg, O.
Davis, W. P., Machine Co., Rochester, N. Y.
Gage Machine Works, Waterford, N. Y.
Johnson, E. E., Worcester, Mass.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Mann, Chas. A., Providence, R. I.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Reed, F. E., Co., Worcester, Mass.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 20.*
Shepard Lathe Co., Cincinnati, O.
Young, W. C., Mfg. Co., Worcester, Mass.

199 **Forming.** See 186, Brass Workers' Lathes.

200 **Fox.** See 186, Brass Workers' Lathes.

201 **Fox Monitor.** See 186, Brass Workers' Lathes.

202 **Gap.** Having a U-shaped bed that increases their capacity for face-plate work.

American Tool Works Co., Cincinnati, O.
Rahn, Mayer, Carpenter Co., Cincinnati, O.

203 **Gun.** For turning and boring cannon and rapid fire guns.

Diamond Machine Co., Providence, R. I.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

204 **Hand.** See 216, Speed Lathes.

205 **Ingot.** For boring, turning and cutting off steel ingots.

Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.

206 **Jewelers'.** See 183, Bench Lathes.

LATHES, continued

207 **Pattern Makers'.** See Finding List.

208 **Polishing.** For polishing or buffing.

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. *See adv. page 32.*
Buescher Mfg. Co., Elkhart, Ind.
Builders Iron Foundry, Providence, R. I.
Capital City Machine Works, Columbus, O.
Challenge Mch. Co., Belmont Ave. & Viola St., Philadelphia, Pa. *See adv. page 33.*
Chapman, H. L., Marcellus, Mich.
Cross & Speirs Machine Co., Waterbury, Conn.
Diamond Machine Co., Providence, R. I.
Fay & Scott, Dexter, Me.
Grabo, E. O., 182 Centre St., New York.
Greaves, Klusman & Co., Cincinnati, O.
Hanson & Van Winkle Co., Newark, N. J.
Harrington, E., Son & Co., Inc., 1503 Penn Ave., Philadelphia.
Inland Tool & Mfg. Co., Chicago, Ill.
Mann, Chas. A., Providence, R. I.
Manville Bros., Co., Waterbury, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Northampton Emery Wheel Co., Leeds, Mass.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Ransom Mfg. Co., Oshkosh, Wis.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Tolman, Cyrus S., Fitchburg, Mass.
Tucker Machine Co., Cincinnati, O.
Washburn Shops, Worcester, Mass.
Waterbury, F. F., & Mch. Co., Waterbury, Conn.
Waterbury Mch. Co., Waterbury, Conn.
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*

209 **Projectile.** Not specially different from ordinary engine lathes, except that they are strong and have powerful driving works; sometimes provided with radius attachment for pointing the projectile.

Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Bradford Mch. Tool Co., Cincinnati, O. *See adv. page 19.*
Bullard Mch. Tool Co., Bridgeport, Conn.
Hamilton Machine Tool Co., Hamilton, O.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Lodge & Shipley Machine Tool Co., Cincinnati, O. *See adv. page 61.*
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Schumacher & Boye, Cincinnati, O.
Springfield Mch. Tool Co., Springfield, O. *See adv. page 23.*

210 **Pulley.** Specially designed for turning pulleys.

American Tool Works Co., Cincinnati, O.
Davis & Furber Co., No. Andover, Mass.
New Haven Mfg. Co., New Haven, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.

LATHES, PULLEY, continued

Pond, L. W., Machine Co., Worcester, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Streit, A., Machine Co., Cincinnati, O.

211 **Roll Turning.** For turning rolling mill and steel work rolls.

Booth, Lloyd, Co., Youngstown, O.
Hogg, George A., Iron & Steel Foundry Co., Pittsburg, Pa.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Morgan Construction Co., Worcester, Mass.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

212 **Screw Cutting.** Having a lead screw and change gears for thread cutting. For screw cutting with dies see 220, Turret Lathes.

American Tool Works Co., Cincinnati, O.
American Watch Tool Co., Waltham, Mass.
Automatic Machine Co., Greenfield, Mass. *See adv. page 5.*
Automatic Machine Co., Bridgeport, Conn.
Barker, Wm., & Co., Cincinnati, O.
Barnes, B. F., Co., Rockford, Ill.
Barnes, W. F. & John, Co., Rockford, Ill.
Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Bradford Mch. Tool Co., Cincinnati, O. *See adv. page 19.*
Bridgeford, Chas., Rochester, N. Y.
Bullard Machine Tool Co., Bridgeport, Conn. *See adv. page 14.*
Burnham, F. A., Tool Co., Jackson, Mich.
Carroll, A. V., Machine Works, Williamsburg, O.
Davis, W. P., Machine Co., Rochester, N. Y.
Dietz Machine Tool Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.
Fay & Scott, Dexter, Me.
Fitchburg Machine Works, Fitchburg, Mass.
Flather & Co., Nashua, N. H. *See adv. page 21.*
Greaves, Klusman & Co., Cincinnati, O.
Hamilton Machine Tool Co., Hamilton, O.
Harrington, E., Son & Co., Inc., 1503 Penn Ave., Philadelphia.
Hendey Mch. Co., Torrington, Conn. *See adv. page 17.*
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Johnson E. E., Worcester, Mass.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Lodge & Shipley Machine Tool Co., Cincinnati, O. *See adv. page 61.*
McCabe, J. J., 14 Dey St., New York.
McMahon & Co., Worcester, Mass.
Mann, Chas. A., Providence, R. I.
Miami Valley Mch. Tool Co., Dayton, O. *See adv. page 57.*
New Haven Mfg. Co., New Haven, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Perkins, F. S., Co., Lowell, Mass.
Pittsburg Mch. Tool Co., Allegheny, Pa.
Porter Machine Works, Hatfield, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros. Co., Worcester, Mass.
Putnam Machine Co., Fitchburg, Mass.

LATHES, SCREW CUTTING, continued

Rahn, Mayer, Carpenter Co., Cincinnati, O.
Reed, F. E., Co., Worcester, Mass.
Robbins, L., Worcester, Mass.
Schumacher & Boye, Cincinnati, O.
Sebastian Lathe Co., Cincinnati, O.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 20.*
Shepard Lathe Co., Cincinnati, O.
Silk, P. P., Mch. Tool Co., Cincinnati, O.
Springfield Foundry Co., Springfield, O.
Springfield Mch. Tool Co., Springfield, O. *See adv. page 23.*
Von Wyck Machine Tool Co., Cincinnati, O.
Walcott, Geo. D., & Son, Jackson, Mich.
Washburn Shops, Worcester, Mass.
Worcester Machine Tool Co., Worcester, Mass.
Young, W. C., Mfg. Co., Worcester, Mass.

213 AUTOMATIC. For automatically threading screws and worms by means of threading tools in place of dies, thus producing more accurate work.

Automatic Machine Co., Bridgeport, Conn.

214 **Set-Over.** See 186, Brass Workers' Lathes.

215 **Shafting.** For turning shafting or similar work of long dimensions.

American Tool Works Co., Cincinnati, O.
Blaisdell, P., & Co., Worcester, Mass.
Bradford Mch. Tool Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.
Fay & Scott, Dexter, Me.
Fitchburg Machine Works, Fitchburg, Mass.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.
Springfield Mch. Tool Co., Springfield, O.

216 **Speed.** Having no mechanically actuated carriages.

American Tool Works Co., Cincinnati, O.
Automatic Machine Co., Bridgeport, Conn.
Automatic Machine Co., Greenfield, Mass. *See adv. page 5.*
Baush Mch. Tool Co., Springfield, Mass. *See adv. page 12.*
Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Blount, J. G., & Co., Everett, Mass. *See adv. page 7.*
Brown & Sharpe Mfg. Co., Providence, R. I.
Burr, J. T., & Son, Kent Ave. & S. 6th St., Brooklyn, N. Y.
Carroll, A. V., Machine Works, Williamsburg, O.
Cross & Speirs Machine Co., Waterbury, Conn.
Diamond Machine Co., Providence, R. I.
Draper Machine Tool Co., Worcester, Mass.
Dreses Mch. Tool Co., Cincinnati, O.
Fay & Scott, Dexter, Me.
Fitchburg Machine Works, Fitchburg, Mass.
Garvin Mch. Co., Spring & Varick Sts., New York.
Grabo, E. O., 182 Centre St., New York.

LATHES, SPEED, continued

Greaves, Klusman & Co., Cincinnati, O.
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Johnson, E. E., Worcester, Mass.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Kidder, R. E., Worcester, Mass.
Mann, Chas. A., Providence, R. I.
National Machine Co., 660 Washington St., Milwaukee, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Perkins, F. S., Co., Lowell, Mass.
Pratt & Whitney Co., Hartford, Conn.
Pryibil, P., 512 W. 41st St., New York.
Putnam Machine Co., Fitchburg, Mass.
Reed, F. E., Co., Worcester, Mass.
Resek Machine Tool Co., Cleveland, O.
Robbins, L., Worcester, Mass.
Root & Vandervoort Engineering Co., Champaign, Ill.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y. *See adv. page 20.*
Shepard Lathe Co., Cincinnati, O.
Spencer, J. E., Bridgeport, Conn.
Stockbridge Mch. Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.
Wells Brothers Company, Greenfield, Mass.
White, John A., Co., Dover, N. H.
Young, W. C., Mfg. Co., Worcester, Mass.

217 **Spinning.** For the forming of sheet metal into various hollow shapes all of circular cross sections.

Blaisdell, P., & Co., Worcester, Mass.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Ferracute Machine Co., Bridgeton, N. J.
Garvin Mch. Co., Spring & Varick Sts., New York.
Grabo, E. O., 182 Centre St., New York.
Greaves, Klusman & Co., Cincinnati, O.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
Merriman, A. H., Meriden, Conn.
Pryibil, P., 512 W. 41st St., New York.
Waterbury, F. F., & Mch. Co., Waterbury, Conn. *See adv. page 38.*

218 **Stone Turning.** Specially designed for turning columns or other circular pieces of marble, stone, etc.

Lincoln Iron Works, Rutland, Vt.
Patch, F. R., Co., Rutland, Vt.
Putnam Machine Co., Fitchburg, Mass.

219 **Stud.** See 184, Bolt Lathes.

LATHES, continued

220 **Turret.** Provided with a multiple tool-holding device called a turret which takes the place of the usual foot stock and carriage. They are usually provided with automatic devices for turning and feeding the turret against the rotating work.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
American Tool Works Co., Cincinnati, O.
American Turret Lathe Mfg. Co., Warren, Pa.
American Watch Tool Co., Waltham, Mass.
Bardons & Oliver, Cleveland, O.
Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Bradford Mch. Tool Co., Cincinnati, O. *See adv. page 19.*
Brown & Sharpe Mfg. Co., Providence, R. I.
Buescher Mfg. Co., Elkhart, Ind.
Bullard Mch. Tool Co., Bridgeport, Conn. *See adv. page 14.*
Cleveland Automatic Machine Co., Cleveland, O.
Draper Machine Tool Co., Worcester, Mass.
Dreses Mch. Tool Co., Cincinnati, O. *See adv. page 26.*
Fay & Scott, Dexter, Me.
Flather & Co., Nashua, N. H.
Foster-Kimball Machine Co., 73-77 Fulton St., Chicago, Ill.
Gage Machine Works, Waterford, N. Y.
Garvin Mch. Co., Spring & Varick Sts., New York.
Gisholt Machine Co., Madison, Wis.
Greaves, Klusman & Co., Cincinnati, O.
Hamilton Machine Tool Co., Hamilton, O.
Harrington, Edwin, Son & Co., Inc., 1503 Penn Ave., Philda.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Jones & Lamson Machine Co., Springfield, Vt. *See adv. page 16.*
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Lodge & Shipley Machine Tool Co., Cincinnati, O. *See adv. page 61.*
Lombard, N. A., Co., Worcester, Mass.
New Haven Mfg. Co., New Haven, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Prentice, Geo. G., & Co., New Haven, Conn.
Rahn, Mayer, Carpenter Co., Cincinnati, O.
Schumacher & Boye, Cincinnati, O.
Sebastian Lathe Co., Cincinnati, O.
Shepard Lathe Co., Cincinnati, O.
Springfield Mch. Tool Co., Springfield, O. *See adv. page 23.*
Streit, A., Machine Co., Cincinnati, O.
Walcott, Geo. D., & Son, Jackson, Mich.
Warner & Swasey Co., Cleveland, O.
Waltham Watch Tool Co., Springfield, Mass. *See adv. page 18.*
Windsor Machine Co., Windsor, Vt. *See adv. page 20.*

221 CHUCKING. Provided with a chuck and usually with a turret, for turning and boring iron castings, etc.

American Tool Works Co., Cincinnati, O.
American Turret Lathe Mfg. Co., Warren, Pa.
Bardons & Oliver, Cleveland, O.
Blaisdell, P., & Co., Worcester, Mass. *See adv. page 60.*
Blount, J. G., & Co., Everett, Mass.
Bradford Mch. Tool Co., Cincinnati, O.

LATHES, CHUCKING, continued

Bullard Mch. Tool Co., Bridgeport, Conn. *See adv. page 14.*
Davis, W. P., Machine Co., Rochester, N. Y.
Draper Machine Tool Co., Worcester, Mass.
Dreses Mch. Tool Co., Cincinnati, O.
Fay & Scott, Dexter, Me.
Flather & Co., Nashua, N. H. *See adv. page 21.*
Garvin Mch. Co., Spring & Varick Sts., New York.
Greaves, Klusman & Co., Cincinnati, O.
Hamilton Machine Tool Co., Hamilton, O.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Lodge & Shipley Machine Tool Co., Cincinnati, O. *See adv. page 61.*
Lombard, N. A., Co., Worcester, Mass.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Rahn, Mayer, Carpenter Co., Cincinnati, O.
Reed, F. E., Co., Worcester, Mass.
Schumacher & Boye, Cincinnati, O.
Warner & Swasey Co., Cleveland, O.
Windsor Machine Co., Windsor, Vt.

222 MILLING MACHINE ATTACHMENTS.

American Tool Works Co., Cincinnati, O.
Becker-Brainard Milling Mch. Co., Hyde Park, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Clough, R. M., Tolland, Conn.
Garvin Mch. Co., Spring & Varick Sts., New York.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Hendey Mch. Co., Torrington, Conn.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Kempsmith Mfg. Co., Milwaukee, Wis.
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.
Owen Machine Tool Co., Springfield, O.
Pedrick & Ayer Co., Plainfield, N. J.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Rochester Die Shaper Co., Rochester, N. Y.
Smith & Mills, Cincinnati, O.
Whiton, D. E., Mch. Co., New London, Conn.

223 MILLING MACHINES. Machines in which the operating tool is a revolving cutter, and which are provided with tables for carrying the work and feeding it against the cutter.

Adams Co., Dubuque, Iowa.
Aurora Tool Works, Aurora, Ind.
Beaman & Smith Co., Providence, R. I.
Becker-Brainard Milling Mch. Co., Hyde Park, Mass. *See adv. page 29.*
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Bremer Machine & Tool Co., Kalamazoo, Mich.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*

MILLING MACHINES, continued

Burr, John T., & Son, Kent Ave. & S. 6th St., Brooklyn, N. Y.
Carter & Hakes Machine Co., Winsted, Conn.
Cincinnati Milling Machine Co., Cincinnati, O.
Cook, Asa S., Co., Hartford, Conn.
Detrick & Harvey Machine Co., Baltimore, Md.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda, Pa.
Fox Machine Co., Grand Rapids, Mich.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Hendey Mch. Co., Torrington, Conn. *See adv. page 17.*
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Ingersoll Milling Machine Co., Rockford, Ill.
Kearney & Trecker, Milwaukee, Wis.
Kempsmith Mfg. Co., Milwaukee, Wis.
Keystone Machine Tool Works, 1037 Ridge Ave., Philda, Pa.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Newton Machine Tool Works, Inc., 24th and Vine Sts., Philda.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Oesterlein Machine Co., Cincinnati, O.
Owens Machine Tool Co., Springfield, O.
Pedrick & Ayer Co., Plainfield, N. J.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Putnam Machine Co., Fitchburg, Mass.
Resek Machine Tool Co., Cleveland, O.
Riehle Bros. Testing Machine Co., 1424 N. 9th St., Philda, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philda, Pa.
Slate, Dwight, Machine Co., Hartford, Conn.
Sloan & Chace Mfg. Co., Ltd., Newark, N. J.
Thurston Mfg. Co., Providence, R. I.
Underwood, H. B., & Co., 1025 Hamilton St., Philadelphia, Pa.
Vanderbeek Tool Works, Hartford, Conn.
Waltham Machine Works, Waltham, Mass.
Waltham Watch Tool Co., Springfield, Mass. *See adv. page 18.*
Warner & Swasey Co., Cleveland, O.
Waterbury Mch. Co., Waterbury, Conn.
Whitney Mfg. Co., Hartford, Conn.

224 **Hand.** Operated by hand.

American Tool Works Co., Cincinnati, O.
Carter & Hakes Machine Co., Winsted, Conn.
Costello, J. E., Machine Works, 60 Centre St., New York.
Fox Machine Co., Grand Rapids, Mich.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Hill, Clarke & Co., 156 Oliver St., Boston, Mass. *See adv. page 65.*
Kempsmith Mfg. Co., Milwaukee, Wis.
Pratt & Whitney Co., Hartford, Conn.
Whitney Mfg. Co., Hartford, Conn.

225 **Universal.** Having the work table and feeds arranged so that all classes of plane, circular, helical, index or other milling may be done. Their equipment includes a pair of index centers, chuck, etc.

American Tool Works Co., Cincinnati, O.

MILLING MACHINES, UNIVERSAL, continued

Becker-Brainard Milling Mch. Co., Hyde Park, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Cincinnati Milling Mch. Co., Cincinnati, O.
Clough, R. M., Tolland, Conn.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
James & Foote, 60 S. Canal St., Chicago, Ill.
Kearney & Trecker, Milwaukee, Wis.
Kempsmith Mfg. Co., Milwaukee, Wis.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Oesterlein Machine Tool Co., Cincinnati, O.
Owens Machine Tool Co., Springfield, O.
Pedrick & Ayer Co., Plainfield, N. J.
Putnam Machine Co., Fitchburg, Mass.

226 **Vertical.** Machines in which the spindle carrying the cutter is vertical.

Beaman & Smith Co., Providence, R. I.
Becker-Brainard Milling Mch. Co., Hyde Park, Mass. *See adv. page 29.*
Blake & Johnson, Waterbury, Conn.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Clough, R. M., Tolland, Conn.
Detrick & Harvey Machine Co., Baltimore, Md.
Fox Machine Co., Grand Rapids, Mich.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Hilles & Jones Co., Wilmington, Del.
Ingersoll Milling Machine Co., Rockford, Ill.
Kearney & Trecker, Milwaukee, Wis.
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pedrick & Ayer Co., Plainfield, N. J.
Putnam Machine Co., Fitchburg, Mass.
Quint, A. D., Hartford, Conn.
Vanderbeek Tool Works, Hartford, Conn.

227 **PLANER ATTACHMENTS.**

Adams Co., Dubuque, Ia.
Bartlett, E. E., 364 Atlantic Ave., Boston, Mass.
Fay & Scott, Dexter, Me.
Fitchburg Machine Works, Fitchburg, Mass.
Flather, Mark, Planer Co., Nashua, N. H.

228 **PLANER CENTERS.** Having an indexing device for use on planers.

Fay & Scott, Dexter, Me.

229 **PLANERS.** For producing plane surfaces on metals; the work table is a reciprocating platen, carrying the work against stationary cutting tools.

Ajax Mfg. Co., Cleveland, O.
American Foundry & Machine Co., Hanover, Pa.

PLANERS, continued

American Tool Works Co., Cincinnati, O.
Bartlett, E. E., 364 Atlantic Ave., Boston, Mass. *See adv. page 18.*
Belmer Machine Tool Co., Cincinnati, O.
Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Blaisdell, P., & Co., Worcester, Mass.
Blount, J. G., & Co., Everett, Mass. *See adv. page 7.*
Chandler Co., Ayer, Mass.
Cincinnati Planer Co., Cincinnati, O.
Cleveland Planer Co., Cleveland, O.
Detrick & Harvey Machine Co., Baltimore, Md.
Draper Machine Tool Co., Worcester, Mass.
Fitchburg Machine Works, Fitchburg, Mass.
Flather, Mark, Planer Co., Nashua, N. H.
Flather & Co., Nashua, N. H. *See adv. page 21.*
Gray, G. A., Co., Cincinnati, O.
Hendey Mch. Co., Torrington, Conn. *See adv. page 17.*
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia.
New Haven Mfg. Co., New Haven, Conn.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Ohio Machine Tool Co., Kenton, O.
Pedrick & Ayer Co., Plainfield, N. J.
Pittsburg Mch. Tool Co., Allegheny, Pa.
Pond, L. W., Machine Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Stockbridge Mch. Co., Worcester, Mass. *See adv. page 22.*
Underwood, H. B., & Co., 1025 Hamilton St., Philadelphia, Pa.
Walker, E. A., Front & Laurel Sts., Philadelphia, Pa.
Walter, E. P., Bridgeport, Conn.
Wheeler, J. S., Worcester, Mass.
Whitcomb Mfg. Co., Worcester, Mass. *See adv. page 50.*
Wilson, W. A., Machine Co., Rochester, N. Y.
Woodward & Powell Planer Co., Worcester, Mass.

230 **Plate.** For planing plate metal.

Cleveland Punch & Shear Works Co., Cleveland, O.
Detrick & Harvey Machine Co., Baltimore, Md.
Hilles & Jones Co., Wilmington, Del.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pedrick & Ayer Co., Plainfield, N. J.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

231 **Traveling Head.** Planer having traveling head, the work being held on a stationary platen.

Cleveland Punch & Shear Works Co., Cleveland, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Walker, E. A., Front & Laurel Sts., Philadelphia, Pa.

232 **PROFILING MACHINES.** Having rotating cutters that may be made to follow a pattern in shaping small parts of machines.

Becker-Brainard Milling Mch. Co., Hyde Park, Mass.
Blake & Johnson, Waterbury, Conn.

PROFILING MACHINES, continued

Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Stark Tool Co., Waltham, Mass.

233 **RACK CUTTING MACHINES.** For cutting regularly spaced gear teeth in a straight line, the cutting tool being either a milling cutter or a single point reciprocating tool.

Fellows Gear Shaper Co., Springfield, Vt.
Flather, Mark, Planer Co., Nashua, N. H.
Garvin Mch. Co., Spring & Varick Sts., New York.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Perkins, F. S., Co., Lowell, Mass.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Slate, Dwight, Machine Co., Hartford, Conn.
Walcott, Geo. D., & Son, Jackson, Mich.
Whiton, D. E., Mch. Co., New London, Conn.

234 **REAMING MACHINES.** For reaming bored or drilled holes.

Cleveland Punch & Shear Works Co., Cleveland, O.
Philadelphia Pneumatic Tool Works, 21st St. & Allegheny Ave., Philadelphia, Pa.

235 **SCREW MACHINES, AUTOMATIC.** For automatically producing screws, studs, pins, nuts, etc., from the commercial bar or wire.

Ames, B. C., & Co., Waltham, Mass.
Automatic Machine Co., Bridgeport, Conn.
Automatic Machine Co., Greenfield, Mass. *See adv. page 5.*
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Cleveland Machine Screw Co., Cleveland, O.
Foster-Kimball Machine Co., 73-77 Fulton St., Chicago, Ill.
Hartford Machine Screw Co., Hartford, Conn.
Manville Bros., Co., Waterbury, Conn.
National-Acme Mfg. Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
Prentice, Geo. G., & Co., New Haven, Conn.
Spencer Automatic Machine Screw Co., Hartford, Conn.
Windsor Machine Co., Windsor, Vt. *See adv. page 20.*

236 **SCREW SHAVING MACHINES.** For finishing the heads of screws made in automatic screw machines.

American Tool Works Co., Cincinnati, O.
Cook, Asa S., Co., Hartford, Conn.
Garvin Mch. Co., Spring & Varick Sts., New York.
Hartford Machine Screw Co., Hartford, Conn.
Pawtucket Mfg. Co., Pawtucket, R. I.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.

237 **SHAPER ATTACHMENTS.**

American Tool Works Co., Cincinnati, O.
Boynton & Plummer, Worcester, Mass.

SHAPER ATTACHMENTS, continued

Cincinnati Shaper Co., Cincinnati, O.
Fay & Scott, Dexter, Me.
Flather, Mark, Planer Co., Nashua, N. H. *See adv. page 22.*
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.
Smith & Mills, Cincinnati, O.

238 **SHAPERS.**

239 **Crank.** In which the ram is driven by a crank motion.

American Tool Works Co., Cincinnati, O.
Barker, Wm., & Co., Cincinnati, O.
Cincinnati Shaper Co., Cincinnati, O.
Fay & Scott, Dexter, Me.
Fitchburg Machine Works, Fitchburg, Mass.
Flather, Mark, Planer Co., Nashua, N. H. *See adv. page 22.*
Flather & Co., Nashua, N. H. *See adv. page 21.*
Fox Machine Co., Grand Rapids, Mich.
Garvin Mch. Co., Spring & Varick Sts., New York.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Kelly, R. A., Machine Co., Xenia, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Ohio Machine Tool Co., Kenton, O.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Queen City Machine Tool Co., Cincinnati, O.
Rhodes, L. E., Hartford, Conn.
Smith & Mills, Cincinnati, O.
Springfield Mch. Tool Co., Springfield, O.
Steptoe, John, Shaper Co., Cincinnati, O.
Stockbridge Mch. Co., Worcester, Mass. *See adv. page 22.*
Walcott, Geo. D., & Son, Jackson, Mich.

240 **Draw Cut.** In which the cutting stroke is taken when the tool is traveling toward the frame of the machine.

Cochrane-Bly Machine Co., Rochester, N. Y.
Colburn Machine Tool Co., Franklin, Pa.
Morton Mfg. Co., Muskegon Heights, Mich.

241 **Friction.** In which the ram is driven by a rack and pinion through friction clutches. The ram is reversed by the simultaneous release and engagement of these clutches, which are driven by open and crossed belts in opposite directions.

Blount, J. G., & Co., Everett, Mass.
Hendey Mch. Co., Torrington, Conn. *See adv. page 17.*
Perkins Machine Co., Warren, Mass.
Putnam Machine Co., Fitchburg, Mass.
Smith & Mills, Cincinnati, O.

242 **Gear.** For automatically producing theoretically correct gear teeth by means of a hardened cutter shaped like a pinion gear and reciprocating across the face of the work in line with its axis.

Fellows Gear Shaper Co., Springfield, Vt.

SHAPERS, continued

243 **Geared.** In which the ram is driven by a rack and pinion and given a slow cutting stroke and a quick return stroke by shifting open and crossed belts the same as on ordinary planers.

American Tool Works Co., Cincinnati, O.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Cincinnati Shaper Co., Cincinnati, O.
Flather, Mark, Planer Co., Nashua, N. H. *See adv. page 22.*
Fox Machine Co., Grand Rapids, Mich.
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Ohio Machine Tool Co., Kenton, O.
Pratt & Whitney Co., Hartford, Conn.
Shepard Lathe Co., Cincinnati, O.
Smith & Mills, Cincinnati, O.
Springfield Mch. Tool Co., Springfield, O.
Steptoe, John, Shaper Co., Cincinnati, O.
Walcott, Geo. D., & Son, Jackson, Mich.
Walter, E. P., Bridgeport, Conn.

244 **Traverse or Traveling Head.** In which the ram travels or feeds across the work.

Boynton & Plummer, Worcester, Mass. *See adv. page 23.*
Cincinnati Shaper Co., Cincinnati, O.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Fay & Scott, Dexter, Me.
Flather, Mark, Planer Co., Nashua, N. H. *See adv. page 22.*
Hendey Mch. Co., Torrington, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

245 **SHEARING MACHINES.** For cutting off rods, bars, plates, etc.

Bertsch & Co., Cambridge City, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*

246 **SLOTTING MACHINES.** For cutting slots and producing plane surfaces, the cutting tool being carried on a vertical ram.

Baker Bros., Toledo, O.
Betts Machine Co., Wilmington, Del. *See adv. page 15.*
Dill, T. C., Mch. Co., Mascher & Somerset Sts., Philadelphia.
Garvin Mch. Co., Spring & Varick Sts., New York.
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia.
New Haven Mfg. Co., New Haven, Conn.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.

SLOTTING MACHINES, continued

Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Putnam Machine Co., Fitchburg, Mass.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

247 **Die.** Specially adapted for vertical planing on dies and similar work.

Garvin Mch. Co., Spring & Varick Sts., New York.

248 **Screw.** For cutting the slots in the heads of screws.

American Tool Works Co., Cincinnati, O.
Betts Machine Co., Wilmington, Del.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Cook, Asa S., Co., Hartford, Conn.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Grant Mfg. & Mch. Co., Bridgeport, Conn.
Hartford Machine Screw Co., Hartford, Conn.
Hubbell, Harvey, Bridgeport, Conn.
Manville Bros., Co., Waterbury, Conn.
National-Acme Mfg. Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
Slate, Dwight, Machine Co., Hartford, Conn.
Waterbury Mch. Co., Waterbury, Conn.

249 **TAPPING ATTACHMENTS.**

Beaman & Smith Co., Providence, R. I.
Errington, F. A., 39 Cortlandt St., New York.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Union Tire Co., Plainfield, N. J.

250 **TAPPING MACHINES.** For tapping nuts or holes in machine parts.

A. & C. Mfg. Co., Cleveland, O.
Atlas Machine Tool & Die Works, Cincinnati, O.
Blake & Johnson, Waterbury, Conn.
Burke Machinery Co., Cleveland, O.
Cross & Speirs Machine Co., Waterbury, Conn.
Exeter Machine Works, Exeter, N. H.
Fosdick Machine Tool Co., Cincinnati, O.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Gould & Eberhardt, Newark, N. J.
Harrington, E., Son & Co., Inc., 1503 Penn Ave., Philadelphia.
Hazelton & Donald Mche. Co., 612 Discount Pl., Philadelphia.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Montgomery & Co., 105-107 Fulton St., New York.
Murray Mfg. Co., Richmond Valley, Staten Island, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pratt & Whitney Co., Hartford, Conn.
Quint, A. D., Hartford, Conn.
St. Louis Machine Tool Co., St. Louis, Mo.
Slate, Dwight, Machine Co., Hartford, Conn.
Stow Mfg. Co., Binghamton, N. Y.
Union Tire Co., Plainfield, N. J.

TAPPING MACHINES, continued

Walter, E. P., Bridgeport, Conn.
Webster & Perks Tool Co., Springfield, O.
Woodward & Rogers Co., Hartford, Conn.

251 **Pipe.** For drilling and tapping holes in pipe under pressure.

Bailey-Farrell Mfg. Co., Pittsburg, Pa.
Baker Bros., Toledo, O.
Cox & Sons Co., Bridgeton, N. J.
Hadesty, J. M., Tamaqua, Pa.
Hubbell, L. D., Hartford, Conn.
Lennox Machine Co., Marshalltown, Ia.
Mueller, H., Mfg. Co., Decatur, Ill.
Saunders, D., Sons, Yonkers, N. Y.
Shelley, George, & Sons, Wilkesbarre, Pa.
Smith, A. P., Mfg. Co., Newark, N. J.
Smith, Millard F., 62 Gold St., New York.
Walworth Mfg. Co., 136 Federal St., Boston, Mass.
Warner & Swasey Co., Cleveland, O.

---

252 MACHINE TOOL ACCESSORIES.

253 **BALLS, STEEL.** For use in bearings to lessen friction.

American Ball Co., Providence, R. I.

Buffalo Excelsior Machine Co., Military Road, Buffalo, N. Y.
Cleveland Ball & Screw Co., Cleveland, O.
Federal Mfg. Co., Cleveland, O. *See adv. page 50.*

254 **BEARINGS, BALL.** Anti-friction bearings in which balls are interposed between the moving and stationary parts, and which carry the load without sliding contact.

Auburn Ball Bearing Co., Rochester, N. Y.
Hess-Bright Mfg. Co., Pennsylvania Bldg., Philadelphia, Pa.
Hyatt Roller Bearing Co., Newark, N. J. *See adv. page 47.*
Iroquois Machine Co., 150 Nassau St., New York.
Resek Machine Tool Co., Cleveland, O.
Standard Roller Bearing Co., 48th St. & Girard Ave., Philda.
Steel Ball Co., 840 Austin Ave., Chicago, Ill.

255 **Roller.** Containing hollow wound springs, interposed between the moving and stationary parts of the bearings.

Vulcan Crucible Steel Co., Aliquippa, Pa.
American Ball Co., Providence, R. I.
American Ball Bearing Co., Cleveland, O.
American Compound Bearing Co., 25 Broad St., New York.
American Roller Bearing Co., South Framingham, Mass.
Arguto Oilless Bearing Co., Wayne Junction, Philadelphia, Pa.
Ball Bearing Co., Merion & Girard Aves., Philadelphia, Pa.
Bantam Mfg. Co., Bantam, Conn.
Guinn Ball Bearing Co., Baltimore, Md.
Hutchison Roller Bearing Co., Jackson, Mich.
Hyatt Roller Bearing Co., Newark, N. J. *See adv. page 47.*

256 CHUCKS.

257 **Boring Mill.** Jaw chucks for use on the tables of boring mills.

Niles-Bement-Pond Co., 136 Liberty St., New York.
Whiton, D. E., Mch. Co., New London, Conn. *See adv. page 30.*

258 **Car Wheel.** For holding car wheels when boring the holes for the axles.

Hoggson & Pettis Mfg. Co., New Haven, Conn. *See adv. page 30.*
Horton, E., & Son Co., Windsor Locks, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Oneida National Chuck Co., Oneida, N. Y.
Skinner Chuck Co., New Britain, Conn.
Union Mfg. Co., New Britain, Conn. *See adv. page 31.*
Westcott Chuck Co., Oneida, N. Y.
Whiton, D. E., Mch. Co., New London, Conn. *See adv. page 30.*

259 **Center Drilling and Reaming.**

Slate, Dwight, Machine Co., Hartford, Conn.

260 **Combination.** See 267, Lathe Chucks.

261 **Cutting-Off Machine.** Special chucks of strong construction for cutting-off machines.

Cushman Chuck Co., Hartford, Conn. *See adv. page 31.*
Pratt & Whitney Co., Hartford, Conn.
Skinner Chuck Co., New Britain, Conn.
Union Mfg. Co., New Britain, Conn.
Westcott Chuck Co., Oneida, N. Y.
Whiton, D. E., Mch. Co., New London, Conn.

262 **Draw.** Chucks operated by moving longitudinally in a taper bearing. Used on precision work.

American Watch Tool Co., Waltham, Mass.
Faneuil Watch Tool Co., Brighton, Mass.
Hendey Mch. Co., Torrington, Conn.
Manville Bros. Co., Waterbury, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Moseley Lathe Co., Elgin, Ill.
Potter & Johnston Machine Co., Pawtucket, R. I .
Pratt & Whitney Co., Hartford, Conn.
Waltham Watch Tool Co., Springfield, Mass.

263 **Drill.** Special chucks for the holding of drills for use in drilling machines.

Almond, T. R,. 83 Washington St., Brooklyn, N. Y.
Brown, R. H., & Co., New Haven, Conn.
Butler Chuck Co., Greenfield, Mass.
Cleveland Twist Drill Co., Cleveland, O.
Cushman Chuck Co., Hartford, Conn.
Errington, F. A., 39 Cortlandt St., New York.
Gates, Fred P., New London, Conn.
Goodell-Pratt Co., Greenfield, Mass.
Hoggson & Pettis Mfg. Co., New Haven, Conn. *See adv. page 30.*
Horton, E., & Son Co., Windsor Locks, Conn.

CHUCKS, DRILL, continued

Jacobs, A. I., Hartford, Conn.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Niles-Bement-Pond Co., 136 Liberty St., New York.
Oneida National Chuck Co., Oneida, N. Y.
Pratt Chuck Co., Frankfort, N. Y.
Rich, George R., Mfg. Co., 171 S. Canal St., Chicago, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Skinner Chuck Co., New Britain, Conn.
Slate, Dwight, Machine Co., Hartford, Conn.
Standard Tool Co., Cleveland, O .
Trump Bros. Machine Co., Wilmington, Del.
Union Mfg. Co., New Britain, Conn. *See adv. page 31.*
Westcott Chuck Co., Oneida, N. Y.
Whitney Mfg. Co., Hartford, Conn.
Whiton, D. E., Mch. Co., New London, Conn. *See adv. page 30.*
Wiley & Russell Mfg. Co., Greenfield, Mass.

264 **Expanding.** For turning eccentrics and other work not concentric with the bore, and provided with adjustments for various degrees of eccentricity.

Blount, J. G., & Co., Everett, Mass.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pedrick & Ayer Co., Plainfield, N. J.
Pryibil, P., 512 W. 41st St., New York.
Underwood, H. B., & Co., 1025 Hamilton St., Philadelphia, Pa.

265 **Independent.** See 267, Lathe Chucks.

266 **Jewelers'.** For small work, such as that of watch makers, etc., and for precision work.

Faneuil Watch Tool Co., Brighton, Mass. *See adv. page 53.*
Manville Bros. Co., Waterbury, Conn.
Morse Twist Drill & Mch. Co., New Bedford, Mass.

267 **Lathe.** Rotating chucks held on lathe spindles, usually having two, three or four jaws which may be independent or universal in their action, or both. The jaws may be operated either by screws or by a scroll.

Ardrey, S. B., & Sons, Bristol, Pa.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn. *See adv. page 30.*
Horton, E., & Son Co., Windsor Locks, Conn.
Leavitt Machine Co., Orange, Mass.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
National Twist Drill & Tool Co., Detroit, Mich.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Oneida National Chuck Co., Oneida, N. Y.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.
Skinner Chuck Co., New Britain, Conn.
Union Mfg. Co., New Britain, Conn.
Westcott Chuck Co., Oneida, N. Y.
Whiton, D. E., Mch. Co., New London, Conn.

CHUCKS, continued

268 **Magnetic.** Chucks without jaws but containing electro-magnets which enable iron or steel pieces to be held by magnetic attraction.

Walker, O. S., & Co., Worcester, Mass. *See adv. page 3.*

269 **Nipple.** For holding short pieces of pipe to be threaded.

Armstrong Mfg. Co., Bridgeport, Conn.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Merrell Mfg. Co., Toledo, O.

270 **Planer.** For holding work on the platens of planers, milling machines, drills, etc.

Bartlett, E. E., 364 Atlantic Ave., Boston, Mass.
Blount, J. G., & Co., Everett, Mass.
Fitchburg Machine Works, Fitchburg, Mass.
Fox Machine Co., Grand Rapids, Mich.
Hollands Mfg. Co., Erie, Pa.
Massey Vise Co., 30-32 S Canal St., Chicago, Ill.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Reed, Francis, Co., Worcester, Mass. *See adv. page 56.*
Skinner Chuck Co., New Britain, Conn.
Union Mfg. Co., New Britain, Conn. *See adv. page 31.*

271 **Tapping.** For holding taps on the spindles of drilling machines to be driven by power.

Bayldon Machine & Tool Co., Jersey City, N. J.
Ideal Machine Co., Portland, Conn.
St. Louis Machine Tool Co., St. Louis, Mo.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

272 **Universal.** See 267, Lathe Chucks.

273 **COLLETS.** Sockets for holding dies, twist drills, reamers, milling machines, arbors, etc. Also made by manufacturers of screw machines.

Brown & Sharpe Mfg. Co., Providence, R. I.
Butterfield & Co., Derby Line, Vt.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass. *See adv. page 51.*
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Wells Brothers Co., Greenfield, Mass.
Whitney Mfg. Co., Hartford, Conn.
Wiley & Russell Mfg. Co., Greenfield, Mass.

274 **COUNTERBORES.** For cutting an annular space of rectangular section around a bolt hole for a flush-head bolt, or for similar work.

Butterfield & Co., Derby Line, Vt.
Cleveland Twist Drill Co., Cleveland, O.
Clough, R. M., Tolland, Conn.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Pratt & Whitney Co., Hartford, Conn.
Standard Tool Co., Cleveland, O.

275 **COUNTERSHAFTS.** Shafts carrying tight and loose, or friction clutch pulleys, for starting and stopping machines. (All machine tool manufacturers usually make countershafts for their own tools.)

Builders Iron Foundry, Providence, R. I.
Chicago Flexible Shaft Co., La Salle Ave. & Ontario St., Chicago, Ill.
Chicago Machine Tool Co., Chicago, Ill.
Diamond Machine Co., Providence, R. I.
Fulton Machine Co., Canal Fulton, O.
Gallagher Mfg. Co., Lynn, Mass.
Garvin Mch. Co., Spring & Varick Sts., New York. *See adv. page 28.*
Kempsmith Mfg. Co., Milwaukee, Wis.
National Machine Tool Co., Cincinnati, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Smith Countershaft Co., Melrose, Mass.
Upton & Gilman, Lowell, Mass.

276 **COVERS AND CUPS, OIL HOLE.** Devices for feeding oil to bearings, and covers for keeping dust from same.

Bay State Stamping Co., Worcester, Mass.
Bowen Mfg. Co., Auburn, N. Y. *See adv. page 40.*
Tucker, W. W. & C. F., Hartford, Conn. *See adv. page 40.*
Winkley Co., Hartford, Conn. *See adv. page 73.*

277 **CUTTERS, FLUE SHEET.** Specially adapted to the rapid and economical production of holes in metal plates such as fire sheets for boilers, structural or bridge work, etc. Used as an accessory to a drilling machine.

Mergenthaler, Ott., Co., Inc., Baltimore, Md.

278 **Milling.** Hardened and tempered steel toothed circular tools for milling machines, which operate by rotating about their central axis.

Adams Co., Dubuque, Ia.
Becker-Brainard Milling Mch. Co., Hyde Park, Mass. *See adv. page 29.*
Brown & Sharpe Mfg. Co., Providence, R. I.
Burr, John T., & Sons, Kent Ave. & S. 6th St., Brooklyn, N. Y.
Cleveland Twist Drill Co., Cleveland, O.
Clough, R. M., Tolland, Conn.
Erlandsen, J., 172 Centre St., New York.
Gay & Ward, Inc., Athol, Mass. *See adv. page 5.*
Gould & Eberhardt, Newark, N. J.
Ingersoll Milling Machine Co., Rockford, Ill.
Keystone Machine Tool Works, Inc., 1037 Ridge Ave., Philda.
Mergenthaler, Ott., Co., Inc., Baltimore, Md.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.
Owen Machine Tool Co., Springfield, O.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Putnam Machine Co., Fitchburg, Mass.
Reading Standard Mfg. Co., Reading, Pa.

CUTTERS, MILLING, continued

Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J.
Standard Tool Co., Cleveland, O. *See adv. page 50.*
Stark Tool Co., Waltham, Mass. *See adv. page 72.*
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
Thurston Mfg. Co., Providence, R. I.
Whitman & Barnes Mfg. Co., Akron, O.
Whitney Mfg. Co., Hartford, Conn.

279 **DIES AND DIE HEADS, PIPE.** For cutting external screw threads on pipes; and suitable frames for carrying thread cutters for external thread work.

Armstrong Mfg. Co., Bridgeport, Conn. *See adv. page 74.*
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Brown, H. B., & Co., East Hampton, Conn.
Butterfield & Co., Derby Line, Vt. *See adv. page 40.*
Card, S. W., Mfg. Co., Mansfield, Mass. *See adv. page 49.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Cox & Sons Co., Bridgeton, N. J.
Curtis & Curtis Co., Bridgeport, Conn. *See adv. page 74.*
Geometric Drill Co., New Haven (Westville Sta.), Conn.
Hart Mfg. Co., Cleveland, O. *See adv. page 48.*
Hoggson & Pettis Mfg. Co., New Haven, Conn. *See adv. page 30.*
Holroyd & Co., Waterford, N. Y. *See adv. page 48.*
Ideal Opening Die Co., 26 West St., New York.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Maines Machine Co., 931 Chestnut St., Philadelphia, Pa.
Merrell Mfg. Co., Toledo, O.
Modern Tool Co., Erie, Pa. *See adv. page 58.*
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Reece, E. F., Co., Greenfield, Mass.
Reed Mfg. Co., Erie, Pa.
Rich, George R., Mfg. Co., 171 S. Canal St., Chicago, Ill.
Saunders, D., Sons, Yonkers, N. Y.
Wells, Fred. E., & Son, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass. *See adv. page 6.*
Winter Bros. Co., Wrentham, Mass.

280 **DOGS, LATHE.** Devices for clamping on work so that it can be revolved by the face-plate of a lathe.

Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Hill Tool Co., Anderson, Ind.
Le Count, Wm. G., South Norwalk, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Tindel-Morris Co., Eddystone, Pa.
Williams, J. H., & Co., 9-31 Richards St., Brooklyn, N. Y.

281 **DRILLS, TWIST.** Drills with helical grooves.

Cincinnati Tool Co., Cincinnati, O.
Cleveland Twist Drill Co., Cleveland, O.
Detroit Twist Drill Co., Detroit, Mich.

DRILLS, TWIST, continued

Etna Mfg. Co., 253 Broadway, New York.
Lincoln-Williams Twist Drill Co., Taunton, Mass.
Lincoln & Wood Co., Taunton, Mass.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
National Twist Drill & Tool Co., Detroit, Mich.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland, O. *See adv. page 50.*
Syracuse Twist Drill Co., Syracuse, N. Y.
Whitman & Barnes Mfg. Co., Akron, O.

282 **EMERY WHEELS.** See 328, Wheels.

283 **EXTRACTORS, OIL.** For extracting oil from iron and metal chips.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
National Separator & Machine Co., Concord, N. H. *See adv. page 40.*
Reed & Curtis Machine Screw Co., Worcester, Mass.

284 **FACE-PLATES AND JAWS.** Face-plates designed to be converted into chucks by attaching the independent jaws, which are mounted on slides and have screw adjustment.

Cushman Chuck Co., Hartford, Conn. *See adv. page 31.*
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Union Mfg. Co., New Britain, Conn. *See adv. page 31.*
Whiton, D. B., Mch. Co., New London, Conn.

285 **FURNITURE, MACHINE SHOP.** Tool Racks, Lathe pans, Tote pans, etc., requisite in a machine shop.

Bay State Tap & Die Co., Mansfield, Mass.
Clark, W. J., Co., Salem, O.
Cleveland Wire Spring Co., Cleveland, O.
Geauga Foundry & Mfg. Co., Painesville, O.
Kilbourne & Jacobs Mfg. Co., Columbus, O. *See adv. page 21.*
Lyon Metallic Mfg. Co., 18-20 Ann St., Chicago, Ill.
Merritt & Co., 1024 Ridge Ave., Philadelphia, Pa.
New Britain Machine Co., New Britain, Conn. *See adv. page 47.*
Whiton, D. E., Mch. Co., New London, Conn.

286 **HOLDERS, DIE.** Sockets for holding a complete die.

Brown & Sharpe Mfg. Co., Providence, R. I.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Holroyd & Co., Waterford, N. Y.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass. *See adv. page 51.*

287 **Drill.** For holding drills stationary when used on revolving work, as when drilling work rotated in a lathe.

Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill.
Beaman & Smith Co., Providence, R. I.

HOLDERS, DRILL, continued

Brown & Sharpe Mfg. Co., Providence, R. I.
Cleveland Twist Drill Co., Cleveland, O.
Errington, F. A., 39 Cortlandt St., New York.
Massachusetts Tool Co., Greenfield, Mass.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Polk, A. J., & Son, Millersburg, Pa.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Union Tire Co., Plainfield, N. J.
Wells Brothers Company, Greenfield, Mass.
Whitney Mfg. Co., Hartford, Conn.

288 **Nipple.** For holding short sections of pipe for threading.

Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn. *See adv. page 74.*
Jarecki Mfg. Co., Ltd., Erie, Pa.

289 **Tap.** For holding taps when driven by a machine.

Beaman & Smith Co., Providence, R. I.
Brown & Sharpe Mfg. Co., Providence, R. I.
Errington, F. A., 39 Cortlandt St., New York.
Ideal Machine Co., Portland, Conn.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Quint, A. D., Hartford, Conn.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Union Tire Co., Plainfield, N. J.
Wells Brothers Company, Greenfield, Mass. *See adv. page 13.*

290 **Tool.** For holding the cutting tools on lathes, planers, shapers, etc.

Armstrong Bros. Tool Co., 617 Austin Ave., Chicago, Ill.
Bickford Drill & Tool Co., Cincinnati, O.
Billings & Spencer Co., Hartford, Conn.
Carr Bros., Syracuse, N. Y.
Fairbanks Machine Tool Co., Springfield, O.
Hill Tool Co., Anderson, Ind.
Jeanesville Iron Works Co., Jeanesville, Pa.
Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.
McCrosky, F. B., Mfg. Co., Meadville, Pa. *See adv. page 59.*
Miami Valley Mch. Tool Co., Dayton, O. *See adv. page 57.*
Mutual Machine Co., 25 Wells St., Hartford, Conn.
O. K. Tool Holder Co., Shelton, Conn.
Reading Standard Mfg. Co., Reading, Pa.
Resek Machine Tool Co., Cleveland, O.
Rich, George R., Mfg. Co., 171 S. Canal St., Chicago, Ill.
Storey, B. W., & Sons, Mount Holly, N. J.
Wells Brothers Company, Greenfield, Mass.
Western Tool & Mfg. Co., Springfield, O.

291 **JACKS, LEVELING.** Small screw jacks for leveling machinery.

Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill.
Binsse Machine Co., Newark, N. J.
Starrett, L. S., Co., Athol, Mass.

292 **JOINTS, UNIVERSAL.** Shaft connections which allow freedom of lateral movement and still convey motion.

Baush Mch. Tool Co., Springfield, Mass. *See adv. page 12.*
Gray & Prior Mch. Co., Hartford, Conn. *See adv. page 46.*
Mutual Machine Co., Hartford, Conn.
Vanderbeek Tool Works, Hartford, Conn. *See adv. page 27.*

293 **MANDRELS.** Accurately centered pieces of iron or steel for carrying work on centers for turning.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Cleveland Twist Drill Co., Cleveland, O.
Le Count, Wm. G., South Norwalk, Conn.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Nicholson, W. H., & Co., Wilkesbarre, Pa.
Pratt & Whitney Co., Hartford, Conn.
Rich, George R., Mfg. Co., 171 S. Canal St., Chicago, Ill.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J. *See adv. page 66.*
Standard Tool Co., Cleveland, O.
Western Tool Mfg. Co., Springfield, O.

294 **PLATES, NAME.** Metal plates bearing the names of manufacturers or selling agents.

Becker, August, 247 Atlantic Ave., Boston, Mass.
Bogue & Crowe, 183 S. Clinton St., Chicago, Ill.
Bridgeport Deox, Bronze & Met. Co., Bridgeport, Conn. *See adv. page 125.*
Buescher Mfg. Co., Elkhart, Ind.
Crowe Metal Mfg. Co., 71 W. Jackson Blvd., Chicago, Ill.
Dayton Plating Works, Dayton, O.
G. & P. Engraving Co., 185 Franklin St., Boston, Mass. *See adv. page 56.*
Murdock Corporation, 152 Boylston St., Boston, Mass. *See adv. page 56.*
Torrey Roller Bushing Co., Bath, Me.
Turner Brass Works, 50 N. Franklin St., Chicago, Ill.

295 **REAMERS.** A cylindrical or tapered tool having a number of longitudinal teeth for smoothing and truing the interior of drilled holes.

Butterfield & Co., Derby Line, Vt.
Chadwick, G. B., & Co., Portsmouth, N. H.
Cleveland Twist Drill Co., Cleveland, O.
Clough, R. M., Tolland, Conn.
Geometric Drill Co., New Haven (Westville Sta.), Conn.
Holroyd & Co., Waterford, N. Y.
Lapointe Machine Tool Co., 32 Atlantic Av., Boston, Mass.
McCrosky, F. B., Mfg. Co., Meadville, Pa. *See adv. page 59.*
Mergenthaler, Ott., Co., Inc., Baltimore, Md.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
National Twist Drill & Tool Co., Detroit, Mich.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Putnam Machine Co., Fitchburg, Mass.
Reading Standard Mfg. Co., Reading, Pa.

REAMERS, continued

Reed, F. E., Co., Worcester, Mass.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J. *See adv. page 66.*
Saunders, D., Sons, Yonkers, N. Y.
Schellenbach & Radcliffe, 211 E. 9th St., Cincinnati, O.
Standard Tool Co., Cleveland, O. *See adv. page 50.*
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philadelphia.
Wells Brothers Company, Greenfield, Mass.
Whitman & Barnes Co., Akron, O.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

296 **RESTS, SLIDE.** (For Speed Lathes.) Detachable rests arranged to be clamped to latheways and usually arranged to give movement to the tool in two directions.

American Tool Works Co., Cincinnati, O.
Bartlett, E. E., 364 Atlantic Ave., Boston, Mass.
Diamond Machine Co., Providence, R. I.
Garvin Mch. Co., Spring & Varick Sts., New York.
Mann, Chas. A., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Reed, F. E., Worcester, Mass.
Sebastian Lathe Co., Cincinnati, O.
Spencer, J. E., Bridgeport, Conn.
Stockbridge Mch. Co., Worcester, Mass.

297 **SCREWS, MACHINE.** Small screws threaded to the so-called machine screw gage.

Blake & Johnson, Waterbury, Conn.
Cincinnati Screw & Tap Co., Cincinnati, O.
Corbin, P. & F., New Britain, Conn.
Garvin Mch. Co., Spring & Varick Sts., New York.
Haskell, Wm. H., Mfg. Co., Pawtucket, R. I.
Hubbell, Harvey, Bridgeport, Conn.
McCloud, Crane & Winter Co., Worcester, Mass.
National-Acme Mfg. Co., Cleveland, O.
Reed & Curtis Machine Screw Co., Worcester, Mass.
Reynolds & Co., New Haven, Conn.
Spencer Automatic Machine Screw Co., Hartford, Conn.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Western Automatic Machine Screw Co., Elyria, O.

298 **SEPARATORS, OIL.** See 283, Extractors, Oil.

299 **TAP REMOVERS.** For removing pieces of taps broken off in a tapped hole.

Atlas Machine Co., Providence, R. I.

300 **TOOLS.**

301 **Boring.** Cutter tools for operating on internal surfaces.

Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill.
Hill Tool Co., Anderson, Ind.
Pratt & Whitney Co., Hartford, Conn.
Reading Standard Mfg. Co., Reading, Pa.

TOOLS, BORING, continued

Slate, Dwight, Machine Co., Hartford, Conn.
Western Tool & Mfg. Co., Springfield, O.

302 **Box.** Special tools for turret lathes to support the work while turning.

American Tool Works Co., Cincinnati, O.
Bayldon Machine & Tool Co., Jersey City, N. J.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Pratt & Whitney Co., Hartford, Conn.
Warner & Swasey Co., Cleveland, O.
Wheeler, Frank, & Son, Meriden, Conn.

303 **Cutting-Off.** For cutting work apart; used principally on the lathe.

Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Hill Tool Co., Anderson, Ind.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Pratt & Whitney Co., Hartford, Conn.
Slate, Dwight, Machine Co., Hartford, Conn.
Western Tool & Mfg. Co., Springfield, O.

304 **Diamond.** Black diamonds set in a suitable holder, for truing emery, corundum or carborundum wheels, and for turning or planing hardened metals.

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. *See adv. page 32.*
Dickinson, Thos. L., 45 Vesey St., New York. *See adv. page 31.*
Northampton Emery Wheel Co., Leeds, Mass.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*

305 **Forming.** Lathe or planer tools which are formed on their cutting edge so as to cut any desired shape, usually without lateral movement of the tool.

American Tool Works Co., Cincinnati, O.
Garvin Mch. Co., Spring & Varick Sts., New York.
Pratt & Whitney Co., Hartford, Conn.
Windsor Mch. Co., Windsor, Vt.

306 **Hollow Milling.** Tools arranged to turn off the outside of a circular piece, when held axially in line with the lathe centers.

American Tool Works Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Geometric Drill Co., New Haven (Westville Sta.), Conn.
Pratt & Whitney Co., Hartford, Conn.
Rogers, John M., Boat, Gauge & Drill Works, Gloucester City, N. J.
Webster & Perks Tool Co., Springfield, O.

307 **Knurling.** For checking the exterior of turned pieces to enable them to be firmly grasped by the hand for manipulation as in the case of a milled head screw, or for ornamenting certain kinds of work.

American Tool Works Co., Cincinnati, O.

TOOLS, KNURLING, continued

Billings & Spencer Co., Hartford, Conn.
Pratt & Whitney Co., Hartford, Conn.

308 **Lathe.** The operating cutting tools used on a lathe.

American Tool Works Co., Cincinnati, O.
Anderson, W. H., & Sons, Inc., Detroit, Mich.
Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill. *See adv. page 68.*
Barnes, W. F. & John Co., Rockford, Ill. *See adv. page 26.*
Billings & Spencer Co., Hartford, Conn.
Carr Bros., Syracuse, N. Y.
Diamond Machine Co., Providence, R. I.
Fairbanks Machine Tool Co., Springfield, O.
Fitchburg Machine Works, Fitchburg, Mass.
Hayward, H. A., Londonderry, Vt.
Hendey Mch. Co., Torrington, Conn. *See adv. page 17.*
Hill Tool Co., Anderson, Ind.
Hoe, R., & Co., 504 Grand St., New York.
Jacques-Bush Mfg. Co., Providence, R. I.
Mingst, C. P., Evansville, Ind.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Putnam Machine Co., Fitchburg, Mass.
Rabiger Bros., & Co., 2d & Diamond Sts., Philadelphia, Pa.
Reading Standard Mfg. Co., Reading, Pa.
Reed, F. E., Co., Worcester, Mass.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Shepard Lathe Co., Cincinnati, O.
Slate, Dwight, Machine Co., Hartford, Conn.
Stortz, John, & Son, 210 Vine St., Philadelphia, Pa.
Superior Tap Co., Springfield, Vt.
U. S. Tool Co., Springfield, O.

309 INSERTED CUTTER. Having holders in which may be inserted the cutting tools.

Armstrong Bros. Tool Co., 613 Austin Ave, Chicag.o, Ill.
Hill Tool Co., Anderson, Ind.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Pratt & Whitney Co., Hartford, Conn.
U. S. Tool Co., Springfield, O.
Western Tool & Mfg. Co., Springfield, O.

310 **Planer.** The operating cutting tools of a planer.

Anderson, W. H., & Sons, Inc., Detroit, Mich.
Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill. *See adv. page 68.*
Fairbanks Machine Tool Co., Springfield, O.
Fitchburg Machine Works, Fitchburg, Mass.
Hayward, H. A., Londonderry, Vt.
Hill Tool Co., Anderson, Ind.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Pedrick & Ayer Co., Plainfield, N. J.
Pratt & Whitney Co., Hartford, Conn.
Putnam Machine Co., Fitchburg, Mass.
Slate, Dwight Machine Co., Hartford, Conn.

TOOLS, PLANER, continued

Western Tool & Mfg. Co., Springfield, O.

311 **Shaper.** Same as Lathe and Planer Tools.

Anderson, W. H., & Sons, Inc., Detroit, Mich.
Boynton & Plummer, Worcester, Mass.
Fairbanks Machine Tool Co., Springfield, O.
Flather, Mark, Planer Co., Nashua, N. H. *See adv. page 22.*

312 **Thread Cutting.** Inserted cutter lathe tools with cutters correctly shaped for threading.

Armstrong Bros. Tool Co., 613 Austin Ave., Chicago, Ill.
Butterfield & Co., Derby Line, Vt.
Hill Tool Co., Anderson, Ind.
Pratt & Whitney Co., Hartford, Conn.
Rivett-Dock Co., Brighton, Boston, Mass. *See adv. page 53.*
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N, J.
Western Tool & Mfg. Co., Springfield, O.

313 **VISES.**

314 **Bicycle.** For holding bicycles and bicycle tubing.

Hollands Mfg. Co., Erie, Pa.
Lewis Tool Co., 44 Barclay St., New York.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Prentiss Vise Co., 44 Barclay St., New York.

315 **Blacksmiths'.**

Burke, P. F., So. Boston, Mass.
Columbus Forge & Iron Co., Columbus, O.

316 **Chipping.** Ordinary bench vises of heavy design.

Emmert Mfg. Co., Waynesboro, Pa.
Howard Iron Works, Buffalo, N. Y.
Jacobson Machine Mfg. Co., Warren, Pa.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Merrill Bros., 465-471 Kent Ave., Brooklyn, N. Y.
Millers Falls Co., Millers Falls, Mass.
Parker, Chas., Co., Meriden, Conn.
Reed Mfg. Co., Erie, Pa.

317 **Drill.** For holding work on drill presses.

Fulton Machine Co., Canal Fulton, O.
Hill Tool Co., Anderson, Ind.
Hopkinson Machine Works, Springfield, Mass.
Jacobson Machine Mfg. Co., Warren, Pa.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Patterson Tool & Supply Co., Dayton, O.

318 **Machinists'.** For holding work for filing, chipping, etc.
Athol Machine Co., Athol, Mass.

Atlas Machine Co., Providence, R. I.
Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Bonney Vise & Tool Works, Inc., 3015 Chestnut St., Philda, Pa.

VISES, MACHINISTS', continued

Bullock, O. W., & Co., Springfield, Mass.
Columbus Forge & Iron Co., Columbus, O.
Emmert Mfg. Co., Waynesboro, Pa.
Hanna Engineering Works, 820 Elston Ave., Chicago, Ill.
Henderer, E., & Co., Wilmington, Del.
Jacobson Machine Mfg. Co., Warren, Pa.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Merrill Bros., 465-471 Kent Ave., Brooklyn, N. Y.
Prentiss Vise Co., 44 Barclay St., New York.
Reed Mfg. Co., Erie, Pa.
Standard Tool & Machine Co., Wilmington, Del.
Williamson Mfg. Co., Bradford, Pa.

319 **Milling Machine.** For holding work on milling machines.

Becker-Brainard Milling Mch. Co., Hyde Park, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Carter & Hakes Machine Co., Winsted, Conn.
Cincinnati Machine Tool Co., Cincinnati, O.
Cincinnati Milling Machine Co., Cincinnati, O.
Garvin Mch. Co., Spring & Varick Sts., New York.
Hill Tool Co., Anderson, Ind.
Kempsmith Mfg. Co., Milwaukee, Wis.
Le Blond, R. K., Machine Tool Co., Cincinnati, O.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Pedrick & Ayer Co., Plainfield, N. J.
Pratt & Whitney, Hartford, Conn.
Vanderbeek Tool Works, Hartford, Conn. *See adv. page 27.*
Whitney Mfg. Co., Hartford, Conn.

320 **Off-Set.** For use where it is desirable to grip irregular shapes or hold bars or rods vertically.

Merrill Bros., 465-471 Kent Ave., Brooklyn, N. Y.

321 **Pin.** Hand vises designed to hold small wire rods.

Goodell-Pratt Co., Greenfield, Mass.
Lowell Wrench Co., Worcester, Mass.

322 **Pipe.** For holding pipe or anything round.

Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Bonney Vise & Tool Works, Inc., 3015 Chestnut St., Philda, Pa.
Butterfield & Co., Derby Line, Vt.
Cox & Sons Co., Bridgeton, N. J.
Crane Co., Canal & Judd Sts., Chicago, Ill.
Curtis & Curtis Co., Bridgeport, Conn.
Devlin, Thos., Mfg. Co., No. 3d St. & Lehigh Ave., Philda, Pa.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Erie Mfg. & Supply Co., Erie, Pa.
Henderer, E., & Co., Wilmington, Del.
Henderer's, A. L., Sons, Wilmington, Del.
Hickman-Melhorn Co., Pittsburg, Pa.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Jarecki Mfg. Co., Erie, Pa.
Kemp, C. M., Mfg. Co., Baltimore, Md.

VISES, PIPE, continued

Lewis Tool Co., 44 Barclay St., New York.
McDonald, A. Y., Mfg. Co., Dubuque, Ia.
Mark Mfg. Co., Evanston, Ill.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Meadville Vise Co., Meadville, Pa.
Millers Falls Co., Millers Falls, Mass.
Oswego Tool Co., Oswego, N. Y.
Parker, Chas., Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay St., New York.
Reed Mfg. Co., Erie, Pa.
Saunders, D., Sons, Yonkers, N. Y.
Tower & Lyon, 95 Chambers St., New York.
Williamson Mfg. Co., Bradford, Pa.

323 **Planer.** For holding work on metal planers.

Carter & Hakes Machine Co., Winsted, Conn.
Fox Machine Co., Grand Rapids, Mich.
Gould & Eberhardt, Newark, N. J.
Hill Tool Co., Anderson, Ind.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Meadville Vise Co., Meadville, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Potter & Johnston Machine Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.

324 **Saw Filers'.** For holding saws while filing the teeth.

Bonney Vise & Tool Works, Inc., 3015 Chestnut St., Philda, Pa.
New Britain Mch. Co., New Britain, Conn.
Parker, Chas., Co., Meriden, Conn.
Potter & Johnston, Machine Co., Pawtucket, R. I.
Prentiss Vise Co., 44 Barclay St., New York.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

325 **Shaper.** For holding work on shapers.

Cincinnati Shaper Co., Cincinnati, O.
Flather, Mark, Planer Co., Nashua, N. H.
Gould & Eberhardt, Newark, N. J.
Hill Tool Co., Anderson, Ind.
Massey Vise Co., 110 E. Indiana St., Chicago, Ill.
Potter & Johnston Machine Co., Pawtucket, R. I.
Smith & Mills, Cincinnati, O.

326 **Universal Jig.** Having drill guide attachment and stop which enables work to be drilled so as to be interchangeable.

Emmert Mfg. Co., Waynesboro, Pa.
Graham Mfg. Co., Providence, R. I.

327 **WHEEL DRESSERS.** For dressing off irregularities of emery, corundum or carborundum wheels by a revolving disk of metal which operates by "spalling action."

Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Bay State Stamping Co., Worcester, Mass.
Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. *See adv. page 32.*
Buffalo Emery Wheel Co., Buffalo, N. Y.

WHEEL DRESSERS, continued

Calder, Geo. H., Lancaster, Pa.
Challenge Mch. Co., Belmont & Viola St., Philadelphia, Pa. *See adv. page 33.*
Chicago Screw Co., 2 N. Canal St., Chicago, Ill.
Chicago Wheel & Mfg. Co., 39-45 W. Randolph St., Chicago, Ill.
Curtin-Hebert Mfg. Co., Gloversville, N. Y.
Desmond-Stephan Mfg. Co., Urbana, O.
Electric Emery Wheel Co., Newark, N. J.
Globe Machine & Stamping Co., Cleveland, O.
Hollands Mfg. Co., Erie, Pa.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Southington Cutlery Co., Southington, Conn.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Standard Tool Co., Cleveland, O.
Vitrified Wheel Co., Westfield, Mass.
Whitney Mfg. Co., Hartford, Conn.
Wrigley, Thos., 302 Dearborn St., Chicago, Ill.

328 **WHEELS, EMERY, CARBORUNDUM, ETC.** Abrasive wheels made of emery, corundum, carborundum, etc., held together by suitable bonds.

Abrasive Material Co., Philadelphia, Pa.
American Emery Wheel Works, Providence, R. I.
American Twist Drill Co., Laconia, N. H.
Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. *See adv. page 32.*
Buffalo Emery Wheel Co., Buffalo, N. Y.
Carborundum Co., Niagara Falls, N. Y. *See adv. page 68.*
Challenge Mch. Co., Belmont Ave. & Viola St., Philda, Pa. *See adv. page 33.*
Chicago Wheel & Mfg. Co., 39-45 W. Randolph St., Chicago, Ill.
Codman, F. L. & J. C., Boston, Mass.
Electric Emery Wheel Co., Newark, N. J.
Hampden Corundum Wheel Co., Springfield, Mass.
National Emery Wheel Co., Worcester, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Standard Emery Wheel Co., Albany, N. Y.
Sterling Emery Wheel Mfg. Co., Tiffin, O.
Vitrified Wheel Co., Westfield, Mass.
Waltham Emery Wheel Co., Waltham, Mass.
Worcester Emery Wheel Co., Worcester, Mass.

---

329 MACHINISTS' SMALL TOOLS.

330 **BEVELS, COMBINATION.** Provided with clamp bolts so that one blade can be clamped at any desired angle and used in combination with the stock of the other.

Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.

BEVELS, COMBINATION, continued

Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*

331 **Universal.** For transferring angles.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

332 **BRACES, RATCHET.** Fitted with a quick-action chuck to tighten or loosen the brace, no matter what the size of he bit-shank may be.

Goodell-Pratt Co., Greenfield, Mass.
Lancaster Machine & Knife Works, Lancaster, N. Y.
Millers Falls Co., Millers Falls, Mass.
Peck, Stow & Wilcox Co., Southington, Conn.

333 **CALIPERS AND DIVIDERS.** Combining calipers and dividers in one instrument.

Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

334 **CALIPERS, BEAM OR SLIDE.** Having a graduated scale of slide.

Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass. *See adv. page 67.*
Smith, Ernst G., Columbia, Pa.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
Turner, F. L., & Co., Orange, Mass.

335 **Firm Joint.** Having a firm joint in place of the old style riveted joint.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Welles, F. A., Milwaukee, Wis.

336 **Gear Tooth.** For accurately measuring the distance from top to pitch line, and thickness at pitch line of gear teeth.

Brown & Sharpe Mfg. Co., Providence, R. I.

337 **Hermaphrodite.** Having one point straight and the other curved; used for centering round stock.

Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Welles, F. A., Milwaukee, Wis.

CALIPERS, continued

338 **Inside.** For taking inside measurements.

Brown & Sharpe Mfg. Co., Providence, R. I.
Kraeuter & Co., Newark, N. J.
Massachusetts Tool Co., Greenfield, Mass.
Springfield Level & Tool Co., Springfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

339 **Inside and Keyhole.** For taking measurements of keyholes, and other inside measurements.

Brown & Sharpe Mfg. Co., Providence, R. I.
Kraeuter & Co., Newark, N. J.
Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Welles, F. A., Milwaukee, Wis.

340 **Lock Joint.** That can be instantly adjusted and locked.
Starrett, L. S., Co., Athol, Mass.

341 **Micrometer.** Convenient and accurate instruments for fine external measurements.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Slocomb, J. T., & Co., Providence, R. I.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

342 **Outside.** For taking outside measurements.

Brown & Sharpe Mfg. Co., Providence, R. I.
Kraeuter & Co., Newark, N. J.
Massachusetts Tool Co., Greenfield, Mass.
Springfield Level & Tool Co., Springfield, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Welles, F. A., Milwaukee, Wis.

343 **Pocket Slide.** See 334, Beam Calipers.

344 **Screw Thread.** For the accurate measurement of V threads on screws, taps, thread gages, etc.

Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Slocomb, J. T., & Co., Providence, R. I.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

345 **Spring.** Fitted with a spring which forces one leg against the adjusting screw.

Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.

CALIPERS, continued

346 **Thread.** For measuring the threaded portion of bolts, studs, etc.

Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

347 **Vernier.** Calipers fitted with a vernier or small moving auxiliary scale.

Brown & Sharpe Mfg. Co., Providence, R. I.

348 **Yankee Thread.** Having the legs so shaped as to permit calipering the bottoms of threads.

Starrett, L. S., Co., Athol, Mass.

349 **CHISELS, COLD.** For cutting cold iron.

Anderson, W. H., & Sons, Inc., Detroit, Mich.
Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Kraeuter & Co., Newark, N. J.
Syracuse Twist Drill Co., Syracuse, N. Y.
Tower & Lyon, 95 Chambers, St., New York.

350 **CHUCKS, DRILL.** See 263, Drill Chucks.

351 **CLAMPS, MACHINISTS' MALLEABLE.** For clamping work to be operated upon.

Cincinnati Tool Co., Cincinnati, O.

352 **Steel.** For holding work for drilling, etc.

Athol Machine Co., Athol, Mass.
Billings & Spencer Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Le Count, W. G., So. Norwalk, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*

353 **COUNTERSINKS.** For countersinking, as a brace-bit drill or a conical pointed punch.

Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Butterfield & Co., Derby Line, Vt.
Cleveland Twist Drill Co., Cleveland, O.
Fitchburg Machine Works, Fitchburg, Mass.
Merrell Mfg. Co., Toledo, O.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Pratt & Whitney Co., Hartford, Conn.
Standard Tool Co., Cleveland, O.
Standard Tool Co., Athol, Mass.
Wells Brothers Company, Greenfield, Mass.
Wiley & Russell Mfg .Co., Greenfield, Mass.

354 **DIAMOND TOOLS, HAND.** For keeping emery, corundum or carborundum wheels true, insuring greater safety and better results.

Dickinson, Thos. L., 45 Vesey St., New York. *See adv. page 31.*
Electric Emery Wheel Co., Newark, N. J.
Jackson, Thaddeus, 416 Third Ave., Brooklyn, N. Y.
Steel Set Diamond Co., 36 Gold St., New York.

355 **DIES, PIPE, HAND.** For cutting external screw threads on pipes by hand.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt. *See adv. page 40.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Pratt & Whitney Co., Hartford, Conn.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

356 **DISKS, REFERENCE.** For setting calipers, testing, measuring tools, etc.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J. *See adv. page 60.*

357 **DIVIDERS, EXTENSION.** Dividers with auxiliary legs; after the adjustment is made the spring and arms may be firmly locked, thus remedying the weak point which renders the common wing dividers only as stiff as the adjustable spring.

Athol Machine Co., Athol, Mass.
Kraeuter & Co., Newark, N. J.
Starrett, L. S., Co., Athol, Mass.
Standard Tool Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

358 **Yankee Spring.** The points of which are opened by means of a bow spring and fulcrum.

Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

359 **DRILLS, HAND.** For drilling work by hand.

Bullock, O. W., & Co., Springfield, Mass.
Goodell-Pratt Co., Greenfield, Mass.
Gustafson, O., 423 West 27th St., New York.

360 **Chain.** Used in connection with a bit-brace or breast drill in many places where it is not convenient to bring a ratchet-drill into use.

Duff Machine Co., Lowell, Mass.
Goodell-Pratt Co., Greenfield, Mass.
Jackson, Thaddeus, 416 Third Ave., Brooklyn, N. Y.

DRILLS, CHAIN, continued

Millers Falls Co., Millers Falls, Mass.
Sound Beach Tool Co., Sound Beach, Conn.

361 **Ratchet.** Operated by means of a ratchet.

Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Pratt & Whitney Co., Hartford, Conn.
Waterbury Tool Co., Waterbury, Conn.

362 **Track.** Specially adapted for drilling holes in railroad tracks.

Buda Foundry & Mfg. Co., Monadnock Blk., Chicago, Ill.
Lowell Wrench Co., Worcester, Mass.
Michigan Machinery Mfg. Co., Ypsilanti, Mich.
Millers Falls Co., Millers Falls, Mass.
Pettibone, Mulliken & Co., Marquette Bldg., Chicago, Ill.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Reed, F. E., Co., Worcester, Mass.
Stow Mfg. Co., Binghamton, N. Y.

363 **EDGES, ADJUSTABLE METAL.** See 414, Steel Rules.

364 **Bevel Straight.** A long narrow piece of steel having its edges ground parallel and true, one edge being beveled.

Massachusetts Tool Co., Greenfield, Mass.
Niagara Machine & Tool Works, Buffalo, N. Y.
Pratt & Whitney Co., Hartford, Conn.
Sawyer Tool Mfg. Co., Fitchburg, Mass. *See adv. page 67.*
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

365 **Steel Straight.** See 414, Steel Rules.

366 **END MEASURING RODS.** Arranged for internal measurements similar to the internal cylindrical gages.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.

367 **ENGRAVING BLOCKS.** For holding rings, watches and pieces of plate while initials, etc., are being engraved on same.

Inland Tool & Mfg. Co., 240 W. Lake St., Chicago, Ill.

368 **FILE SHARPENING MACHINES.**

American Steel Tool Co., Chicago, Ill.

369 **FILES.** Hard steel abrading or smoothing instruments having their principal edges sharply rigid so as to form cutting edges or teeth.

American Swiss File & Tool Co., Elizabeth, N. J. *See adv. page 64.*
Barnett, G. & H., Co., 21 Richmond St., Philadelphia, Pa.
Disston, Henry, & Sons, Tacony and No. Front Sts., Philda.
Fitchburg File Works, Fitchburg, Mass.
Hayes File Co., 474 Franklin St., Detroit, Mich.
Mayer & Co., Philadelphia, Pa.
Nicholson File Co., Providence, R. I.

FILES, continued

Owen, W. S., 227 Eddy St., Providence, R. I.
Reynolds Bros., Columbus, O.
Troy File Works, Troy, N. Y.

370 **FOOT WHEELS.** For driving jewelers' lathes, polishing heads, etc.

Inland Tool & Mfg. Co., 240 W. Lake St., Chicago, Ill.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Slotkin & Praglin, 210 Canal St., New York.

371 **GAGES, BEVEL.** Two narrow pieces of steel whose edges are ground parallel and true connected by a slotted link which by means of two thumb-nuts allow them to be clamped at any desired angle.

Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass. *See adv. page 67.*
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*

372 **Caliper.** For fine adjustment for either inside or outside measurements.

Athol Machine Co., Athol, Mass.
Billings & Spencer Co., Hartford, Conn.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Williams, J. H., & Co., 9-31 Richards St., Brooklyn, N. Y.

373 **Center.** For testing lathe centers.

Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Starrett, L. S., Co., Athol, Mass.
Wyke, J., & Co., East Boston, Mass.

374 **Combination Center, Depth, Angle and Twist Drill.**

Wyke, J., & Co., East Boston, Mass.

375 **Cylindrical.** For use in testing the sizes of holes.

Brown & Sharpe Mfg. Co., Providence, R. I.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Pratt & Whitney Co., Hartford, Conn.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J.

376 **Depth.** For testing depth of holes.

Athol Machine Co., Athol, Mass.
Billings & Spencer Co., Hartford, Conn.
Brown & Sharpe Mfg. Co., Providence, R. I.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Massachusetts Tool Co., Greenfield, Mass.

GAGES, DEPTH, continued

Sawyer Tool Mfg. Co., Fitchburg, Mass.
Slocomb, J. T., & Co., Providence, R. I.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Turner, F. L., & Co., Orange, Mass.
Wyke, J., & Co., E. Boston, Mass.

377 **Depth and Bevel.** For measuring the depth of small holes and cavities, which enables the operator to tell the exact measurement without using a rule.

Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Standard Tool Co., Athol, Mass.

378 **Drill.** Consisting of a flat steel plate drilled with holes to correspond with the number of sizes of twist drills.

Brown & Sharpe Mfg. Co., Providence, R. I.
Standard Tool Co., Athol, Mass.

379 **Height.** For measuring heights.
Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J.

380 **Inspectors'.** For measuring the thickness of metal plates, etc., where it is necessary to take the measurement through a hole in the article measured.
Starrett, L. S., Co., Athol, Mass.

381 **Iron Plane.** For accurately planing bevels at any desired angle, or making an even joint.
Goodell-Pratt Co., Greenfield, Mass.

382 **Limit.** For keeping the product within the specified limits, and doing away with the necessity of constantly measuring work and comparing with figures.

Brown & Sharpe Mfg. Co., Providence, R. I.
Cleveland Twist Drill Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J.

383 **Micrometer.** Designed for use in making internal measurements.

Brown & Sharpe Mfg. Co., Providence, R. I.
Haines Gauge Co., 4th & Chestnut Sts., Philadelphia, Pa.
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Slocomb, J. T., & Co., Providence, R. I.
Smith, Ernst G., Columbia, Pa.
Starrett, L. S., Co., Athol, Mass.

384 **Micrometer Caliper.** This gage is made to fit scales 1¼ inches wide, affording longer scope than anything of its kind heretofore made.

Massachusetts Tool Co., Greenfield, Mass.

GAGES, MICROMETER CALIPER, continued

Starrett, L. S., Co., Athol, Mass.

385 **Rolling Mill.** Made of steel hardened and tempered, and so adapted to rough usage.

Brown & Sharpe Mfg. Co., Providence, R. I.

386 **Scratch.** For laying out work.

Billings & Spencer Co., Hartford, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

387 **Screw Pitch.** For measuring up the pitch of screw threads.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

388 **Screw Thread.** For measuring screw threads.

Brown & Sharpe Mfg. Co., Providence, R. I.
Bullock, O. W., & Co., Springfield, Mass.
Card, S. W., Mfg. Co., Mansfield, Mass.
Massachusetts Tool Co., Greenfield, Mass.
Pratt & Whitney Co., Hartford, Conn.
Slocomb, J. T., & Co., Providence, R. I.

389 **Splining or Keyseat.** For setting shafting, or planing, shaping, milling or drilling machines when about to have slots, splines, or keyseats cut into them; also for setting the tools, whether for planing or milling out slots.

Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Wyke, J., & Co., E. Boston, Mass.

390 **Stair.** For use with ordinary carpenters' squares in cutting in rafters, braces, stairs, etc.

Starrett, L. S., Co., Athol, Mass.

391 **Surface.** For laying off work usually for plane surfaces.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J. *See adv. page 66.*
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Welles, F. A., Milwaukee, Wis.
Wyke, J., & Co., E. Boston, Mass.

392 **Worm Thread Tool.** For grinding thread tools, for cutting worm threads 29 degrees angle.

Brown & Sharpe Mfg. Co., Providence, R. I.

393 **HAMMERS.** Designed especially for machinists' use.

Anderson, W. H., & Sons, Inc., Detroit, Mich.
Atha Tool Co., Newark, N. J.
Billings & Spencer Co., Hartford, Conn.
Chambersburg Engineering Co., Chambersburg, Pa. *See adv. page 36.*
Cheney, Henry, Hammer Co., Little Falls, N. Y.
Evansville Tool Works, Evansville, Ind.
Heller Bros. Co., Newark, N. J.
Maydole, David, Hammer Co., Norwich, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Plumb, Fayette R., Inc., Frankford, Pa.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Solid Steel Tool Co., 11 S. Jefferson St., Chicago, Ill.
Vaughan & Bushnell Mfg. Co., 875 Carroll Ave., Chicago, Ill.
Warner, M. R., & Son, Cromwell, Conn.

394 **HEATERS, GAS OR OIL.** For hardening and tempering tools; for case-hardening, annealing, tempering, etc.

American Gas Furnace Co., 23 John St., New York. *See adv. page 64.*
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Chicago Flexible Shaft Co., La Salle Ave. and Ontario St., Chicago, Ill.
Rockwell Engr. Co., 26 Cortlandt St., New York.

395 **INDICATORS, LATHE TEST.** For setting centrally any point or hole in a piece of work to be operated upon in a lathe or upon a face-plate.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*

396 **Test.** For testing the accuracy of alignment, inspecting and erecting machinery, setting work or testing for parallelism.

American Watch Tool Co., Waltham, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.

397 **JACK-SCREWS.** Designed for tool room use for leveling up work on a planer bed or under an upright drill, setting up machinery, etc.

Binsse Machine Co., Newark, N. J.
Millers Falls Co., Millers Falls, Mass.
Starrett, L. S., Co., Athol, Mass.

398 **KEYS, CENTER.** For removing taper shank drills from drill spindle.

Billings & Spencer Co., Hartford, Conn.

399 **Standard Flat Riveted.** For preventing nuts on bolts from loosening or backing off.

Standard Tool Co., Cleveland, O.

400 **LEVELS.** For bringing work into a horizontal plane.
Athol Machine Co., Athol, Mass.

Millers Falls Co., Millers Falls, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass. *See adv. page 67.*

LEVELS, continued

Smith, Ernst G., Columbia, Pa.
Springfield Level & Tool Co., Springfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
Tower & Lyon, 95 Chambers St., New York.

401 **Bench.** Having a plane under surface which adapts them to be laid on any flat surface to test it.

Athol Machine Co., Athol, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

402 **Engineers' and Plumbers'.** Mounted on a tripod and furnished with a telescope or eye piece for leveling to distant objects.

Starrett, L. S., Co., Athol, Mass.

403 **Pocket.** Small bench levels.

Athol Machine Co., Athol, Mass.
Chapin-Stephens Co., Pine Meadow, Conn.
Smith, Ernst G., Columbia, Pa.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Tower & Lyons, 95 Chambers St., New York.

404 **LINERS, SECTION.** For use with draughtsmen's straight edge or T square and protractor.

Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*

405 **MEASURING MACHINES.** For use in the tool room in preparing reamers, mandrels, etc.

Pratt & Whitney Co., Hartford, Conn.
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J. *See adv. page 66.*
Syracuse Twist Drill Co., Syracuse, N. Y.

406 **MICROMETERS.** Precision instruments used in making fine measurements.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass. *See adv. page 67.*
Slocomb, J. T., & Co., Providence, R. I.
Smith, Ernst G., Columbia, Pa.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Syracuse Twist Drill Co., Syracuse, N. Y.

407 **PLUMB BOBS, MERCURY.** Filled with mercury, for use in gaining a plumb line.

Brown & Sharpe Mfg. Co., Providence, R. I.
Starrett, L. S., Co., Athol, Mass.

408 **PROTRACTORS, BEVEL.** Graduated semicircular protractors having a pivoted arm, used for measuring off angles.

Athol Machine Co., Athol, Mass.

PROTRACTORS, BEVEL, continued

Brown & Sharpe Mfg. Co., Providence, R. I.
Kelsey, D. J., New Haven, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*

409 **PUNCHES, CENTER.** Round knurled pieces of steel one end of which is tapered and pointed for laying out work.

Goodell-Pratt Co., Greenfield, Mass.
Kraeuter & Co., Newark, N. J.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Starrett, L. S., Co., Athol, Mass.
Syracuse Twist Drill Co., Syracuse, N. Y.

410 **REAMERS, HAND.** Hardened steel cutting tools for enlarging or tapering holes. Usually made with longitudinal cutters and flutes.

Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Cleveland Twist Drill Co., Cleveland, O.
Holroyd & Co., Waterford, N. Y.
King, J. M., & Co., Waterford, N. Y.
Kraeuter & Co., Newark, N. J.
Lapointe Machine Tool Co., 32 Atlantic Av., Boston, Mass.
McCrosky, F. B., Mfg. Co., Meadville, Pa. *See adv. page 59.*
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Rogers, John M., Boat Gauge & Drill Works, Gloucester City, N. J.
Saunders, D., Sons, Yonkers, N. Y.
Schellenbach & Radcliffe, 211 E. 9th St., Cincinnati, O.
Standard Tool Co., Cleveland, O.
Tower & Lyon, 95 Chambers St., New York.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

411 **RULES, KEY-SEAT.** For laying out key-seats and shafts.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.

412 **Shrink.** Graduated to give the necessary allowance for shrinkage in castings.

Brown & Sharpe Mfg. Co., Providence, R. I.
Starrett, L. S., Co., Athol, Mass.
Wyke, J., & Co., E. Boston, Mass.

413 **Slide Caliper.** Having a slide caliper adjustment.

Brown & Sharpe Mfg. Co., Providence, R. I.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

RULES, continued

414 **Steel.** Straight strips of metal graduated to show inches and fractions of inches.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Smith, Ernst G., Columbia, Pa.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Wyke, J., & Co., East Boston, Mass.

415 **SAW BLADES, BAND.**

Disston, Henry, & Sons, Tacony and No. Front Sts., Philda, Pa.
Jennings, C. E., & Co., 101 Reade St., New York.
Massachusetts Saw Works, Springfield, Mass.
National Saw Co., Newark, N. J.

416 **Hack.**

Atkins, E. C., & Co., Indianapolis, Ind.
Goodell-Pratt Co., Greenfield, Mass.
Massachusetts Saw Works, Springfield, Mass.
Montgomery & Co., 105-107 Fulton St., New York.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Springfield Machine Screw Co., Springfield, Mass.
Starrett, L. S., Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
West Haven Mfg. Co., New Haven, Conn. *See adv. page 58.*

417 **SAWS, HACK, HAND.** Close toothed metal cutting frame saws operated by hand.

Atkins, E. C., & Co., Indianapolis, Ind.
Diamond Saw & Stamping Works, Buffalo, N. Y.
Fitchburg File Works, Fitchburg, Mass.
Goodell-Pratt Co., Greenfield, Mass.
Griffin, G. W., & Co., Franklin Falls, N. H.
Jennings, C. E., & Co., 101 Reade St., New York.
Massachusetts Saw Works, Springfield, Mass.
Millers Falls Co., Millers Falls, Mass.
Patterson Tool & Supply Co., Dayton, O.
Springfield Machine Screw Co., Springfield, Mass.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
Thompson, Henry G., & Son Co., New Haven, Conn.
West Haven Mfg. Co., New Haven, Conn. *See adv. page 58.*

418 **Power.**

Euchenhofer, E. E., Machine Works, Dayton, O.
Goodell-Pratt Co., Greenfield, Mass.
Hayward, H. A., Londonderry, Vt.
Hoefer Mfg. Co., Freeport, Ill.
Millers Falls Co., Millers Falls, Mass.
Montgomery & Co., 105-107 Fulton St., New York.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Olmsted, H. L., Hasbrouck Heights, N. J.
Patterson Tool & Supply Co., Dayton, O.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.

SAWS, POWER, continued

Robertson Mfg. Co., 1451 Niagara St., Buffalo, N. Y.
Story, H. T., 18-30 W. Randolph St., Chicago, Ill.
West Haven Mfg. Co., New Haven, Conn. *See adv. page 58.*

419 **SCREW PLATES.** For cutting threads on bolts.

Bay State Tap & Die Co., Mansfield, Mass.
Billings & Spencer Co., Hartford, Conn.
Brubaker, W. L., & Bros., Millersburg, Pa.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass. *See adv. page 49.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Hart Mfg. Co., Cleveland, O.
Holroyd & Co., Waterford, N. Y. *See adv. page 48.*
King, J. M., & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Oster Mfg. Co., Cleveland, O.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass. *See adv. page 51.*
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Wells Brothers Company, Greenfield, Mass. *See adv. page 13.*
Wiley & Russell Mfg. Co., Greenfield, Mass. *See adv. page 6.*
Winter Bros. Co., Wrentham, Mass.

420 **SCRIBERS.** Sharp pointed tools used in marking or scribing.

Hoggson & Pettis Mfg. Co., New Haven, Conn. *See adv. page 30.*
Kraeuter & Co., Newark, N. J.
Massachusetts Tool Co., Greenfield, Mass.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

421 **SOCKETS, DRILL.** Metal pieces for holding taper shank drills.
Cleveland Twist Drill Co., Cleveland, O.

Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Pratt & Whitney Co., Hartford, Conn.
Rich, George R., Mfg. Co., 171 S. Canal St., Chicago, Ill.
Standard Tool Co., Cleveland, O.
Whitney Mfg. Co., Hartford, Conn.

422 **Grip.** For taper and straight shank drills and other tools.

Cleveland Twist Drill Co., Cleveland, O.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, O.

423 **Oil Feed.** So constructed that a continuous feed of lubricant can be supplied at the cutting edges of the drill.

Cleveland Twist Drill Co., Cleveland, O.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, O.

424 **Taper.** Collets for holding and driving drills, reamers, counterbores, etc.

Billings & Spencer Co., Hartford, Conn.

SOCKETS, TAPER, continued

Cleveland Twist Drill Co., Cleveland, O.
Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.

425 **SQUARES, CALIPER.** Having a caliper adjustment for laying out work.

Billings & Spencer Co., Hartford, Conn.
Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Massachusetts Tool Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.
Turner, F. L., & Co., Orange, Mass.

426 **Center.** For laying out the squares on cylindrical work.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass. *See adv. page 67.*
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

427 **Combination.** Combining Square, Level and Protractor in one tool.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Starrett, L. S., Co., Athol, Mass.

428 **Draughtsmen's T.** Shaped like a T; used principally by draughtsmen.

Brown & Sharpe Mfg. Co., Providence, R. I.
Kelsey, D. J., New Haven, Conn.
Starrett, L. S., Co., Athol, Mass.
Wyke, J., & Co., E. Boston, Mass.

429 **Standard.** For laying out angles.

Brown & Sharpe Mfg. Co., Providence, R. I.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

430 **Try.** Small squares for testing the right angularity of work.

Athol Machine Co., Athol, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Standard Tool Co., Athol, Mass.
Starrett, L. S., Co., Athol, Mass.

431 **STOCKS, RATCHET.** Die stocks having a ratchet handle for permitting their use in contracted places.

Hollands Mfg. Co., Erie, Pa.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Lowell Wrench Co., Worcester, Mass.

432 **STOCKS AND DIES.** Handles for holding thread dies and hardened steel cutters for threading bolts, pipe, etc.

Armstrong Mfg. Co., Bridgeport, Conn. *See adv. page 74.*
Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.
Brubaker, W. L., & Bros., Millersburg, Pa.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Devlin, Thomas Mfg. Co., N. 3d St. & Lehigh Ave., Philda, Pa.
Hart Mfg. Co., Cleveland, O. *See adv. page 48.*
Hayes Tool Co., Portland, Me.
Hollands Mfg. Co., Erie, Pa.
Holroyd & Co., Waterford, N. Y. *See adv. page 48.*
Jarecki Mfg. Co., Ltd., Erie, Pa.
King, J. M., & Co., Waterford, N. Y.
National Hardware & Malleable Iron Co., Lehigh Ave., American and 3d Sts., Philadelphia, Pa.
Oster Mfg. Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass. *See adv. page 51.*
Reed Mfg. Co., Erie, Pa.
Saunders', D., Sons, Yonkers, N. Y.
Standard Engineering Co., Ellwood City, Pa.
Wells, Fred. E., & Son, Greenfield, Mass.
Wells Brothers Company, Greenfield, Mass. *See adv. page 13.*
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

433 **TAPES, STEEL.** Measuring tapes made of sheet steel.

Lufkin Rule Co., Saginaw, Mich.
Starrett, L. S., Co., Athol, Mass.

434 **TAPS, BICYCLE.** Of special size and lead of thread for bicycle work.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt. *See adv. page 40.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Card, S. W., Mfg. Co., Mansfield, Mass. *See adv. page 49.*
Holroyd & Co., Waterford, N. Y.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass.
Standard Tool Co., Athol, Mass.
Wells Brothers' Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros Co., Wrentham, Mass.

435 **Bit-Brace.** Having a shank adapted to be held in a carpenter's bit-brace.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Holroyd & Co., Waterford, N. Y.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass.

TAPS, BIT-BRACE, continued

Standard Tool Co., Cleveland, O.
Wells Brothers' Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

436 **Boiler Makers'.** Having the same lead of thread for all sizes used. Usually 12 threads per inch.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass. *See adv. page 49.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Cleveland Twist Drill Co., Cleveland, O.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass.
Standard Tool Co., Cleveland, O.
Wells Brothers Co., Greenfield, Mass. *See adv. page 13*
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

437 **Hand.** Usually made in sets of three, viz., taper, plug, and bottoming, with squared ends to be turned by hand.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass. *See adv. page 49.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Cleveland Twist Drill Co., Cleveland, O.
Hart Mfg. Co., Cleveland, O.
Holroyd & Co., Waterford, N. Y. *See adv. page 48.*
King, J. M., & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Reece, E. F., Co., Greenfield, Mass.
Saunders', D., Sons, Yonkers, N. Y.
Standard Tool Co., Cleveland, O. *See adv. page 50.*
Superior Tap Co., Springfield, Vt.
Wells Brothers Company, Greenfield, Mass. *See adv. page 13.*
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

438 **Hob.** Having a greater number of flutes than ordinary taps, and used for threading dies, hobbing worm wheels, etc.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass.
Standard Tool Co., Cleveland, O.

TAPS, HOB, continued

Wells Brothers' Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

439 **Machine-Screw.** Having lead of thread corresponding to the size of machine screws.

American Screw Co., Providence, R. I.
Bay State Tap & Die Co., Mansfield, Mass.
Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass. *See adv. page 49.*
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Holroyd & Co., Waterford, N. Y.
King, J. M., & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass.
Standard Tool Co., Cleveland, O.
Wells Brothers' Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

440 **Master.** For cutting solid and open dies.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Pratt & Whitney Co., Hartford, Conn.
Standard Tool Co., Cleveland, O. *See adv. page 50.*
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

441 **Patch Bolt.** Boiler makers' hand taps.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass.
Standard Tool Co., Cleveland, O.
Wells Brothers' Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

442 **Pulley.** For tapping pulleys and deep holes.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.

TAPS, PULLEY, continued

Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Cleveland Twist Drill Co., Cleveland, O.
Delano, E. A., 50-56 So. Clinton St., Chicago, Ill.
Holroyd & Co., Waterford, N. Y.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn.
Reece, E. F., Co., Greenfield, Mass.
Standard Tool Co., Cleveland, O.
Wells Brothers' Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

443 **Stay-Bolt.** Boiler makers' taps having a reamer and a long threaded part and a long shank for tapping through the two walls of a steam boiler for stay-bolts.

Bay State Tap & Die Co., Mansfield, Mass.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Cleveland Twist Drill Co., Cleveland, O.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn.
Standard Tool Co., Cleveland, O.
Superior Tap Co., Springfield, Vt.
Wells Brothers' Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros. Co., Wrentham, Mass.

444 **TAPS AND REAMERS, PIPE.** Taper taps for threading pipe fittings, and reamers for properly tapering the holes in pipe fittings before threading.

Bay State Tap & Die Co., Mansfield, Mass.
Brubaker, W. L., & Bros., Millersburg, Pa.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Champion Blower & Forge Co., Lancaster, Pa.
Hart Mfg. Co., Cleveland, O.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass. *See adv. page 1.*
King, J. M., & Co., Waterford, N. Y.
Oster Mfg. Co., Cleveland, O.
Polk, A. J., & Son, Millersburg, Pa.
Pratt & Whitney Co., Hartford, Conn.
Standard Tool Co., Cleveland, O. *See adv. page 50.*
Wells Brothers Company, Greenfield, Mass. *See adv. page 13.*
Wiley & Russell Mfg. Co., Greenfield, Mass. *See adv. page 6.*
Winter Bros. Co., Wrentham, Mass.

445 **TONGS, PIPE.** For turning pipe or other cylindrical work.

Anderson, W. H., & Sons, Inc., Detroit, Mich.
Barnes Tool Co., New Haven, Conn.

446 **TRAMMELS, EXTENSION BEAM.** For describing large circles, etc., the capacity of which is determined by the length of the beam which may be extended to any practicable size.

Massachusetts Tool Co., Greenfield, Mass.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Slate, Dwight, Machine Co., Hartford, Conn.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

447 **TRIANGLES, STEEL.** For draughtsmen's use.

Brown & Sharpe Mfg. Co., Providence, R. I. *See adv. page 11.*

448 **WRENCHES, BRIDGE BUILDERS'.** Large and heavy wrenches, having a hole in the end of handle for a tackle.

Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.
Lowell Wrench Co., Worcester, Mass.

449 **Monkey.** Having adjustable jaws.

Barnes Tool Co., New Haven, Conn.
Bemis & Call, Hardware & Tool Co., Springfield, Mass.
Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Coes Wrench Co., Worcester, Mass. *See adv. page 46.*

450 **Pipe.** For turning pipe or other cylindrical work.

Armstrong Mfg. Co., Bridgeport, Conn.
Atlas Pipe Wrench Co., 110 Liberty St., New York.
Aurora Mfg. & Tool Co., Aurora, Ill.
Belden Machine Co., New Haven, Conn.
Bemis & Call Hardware & Tool Co., Springfield, Mass.
Billings & Spencer Co., Hartford, Conn.
Bonney Vise & Tool Works, Inc., 3015 Chestnut St., Philda, Pa.
Brock Wrench Mfg. Co., 45 Dey St., New York.
Burr, Wm. H., 108 So. 8th St., Philadelphia, Pa.
Chicago Hardware Mfg. Co., 53 Clark St., Chicago, Ill.
Hawkeye Wrench Co., Marshalltown, Ia.
Hjorth, William, & Co., Jamestown, N. Y.
Hollands Mfg. Co., Erie, Pa.
Imperial Mfg. Co., Jersey City, N. J.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Jennings, C. E., & Co., 101 Reade St., New York.
Kilborn & Bishop Co., New Haven, Conn.
Massachusetts Tool Co., Greenfield, Mass.
Oswego Tool Co., Oswego, N. Y.
Page-Storms Drop Forge Co., Springfield, Mass.
Parmelee Wrench Co., 1056 W. Monroe St., Chicago, Ill. *See adv. page 73.*
Reed Mfg. Co., Erie, Pa.
Robbins, Gamwell & Co., Pittsfield, Mass.
Star Mfg. Co., Carpentersville, Ill.
Sullivan, J. F., Fitchburg, Mass.
Tower & Lyon, 95 Chambers St., New York.
Trimont Mfg. Co., Roxbury, Mass *See adv. page 70.*
Wakefield, J. E., Worcester, Mass.
Walworth Mfg. Co., 134 Federal St., Boston, Mass.
Warnock Mfg. Co., 22 High St., Boston, Mass.
Whitman & Barnes Mfg. Co., Akron, O.
Williams, J. H., & Co., Brooklyn, N. Y.

WRENCHES, continued

451 **Ratchet.** Having a ratchet adjustment.

Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.
Lowell Wrench Co., Worcester, Mass.

452 **Socket.** For use in places that cannot be reached by other wrenches, for putting up hangers, running taps and reamers, and for putting in lag screws.

Harris, Sam'l, & Co., 23-25 S. Clinton St., Chicago, Ill.
Keystone Mfg. Co., 41-51 Chandler St., Buffalo, N. Y.
Williams, J. H., & Co., 9-31 Richards St., Brooklyn, N. Y.

453 **Standard.** Having jaw openings to fit standard nuts.

Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Card, S. W., Mfg. Co., Mansfield, Mass.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Hart Mfg. Co., Cleveland, O.
Holroyd & Co., Waterford, N. Y. *See adv. page 48.*
Oster Mfg. Co., Cleveland, O.
Reece, E. F., Co., Greenfield, Mass.
Standard Tool Co., Cleveland, O.
Williams, J. H., & Co., Brooklyn, N. Y.

454 **Tap.** Specially adapted for taps.

Armstrong Mfg. Co., Bridgeport, Conn.
Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.
Butterfield & Co., Derby Line, Vt.
Card, S. W., Mfg. Co., Mansfield, Mass.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Holroyd & Co., Waterford, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Oster Mfg. Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
Robertson Mfg. Co., 1451 Niagara St., Buffalo, N. Y.
Sawyer Tool Mfg. Co., Fitchburg, Mass.
Springfield Machine Screw Co., Springfield, Mass.
Standard Tool Co., Cleveland, O. *See adv. page 50.*
Wells Bros. Company, Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

---

455 METAL WORKING MACHINERY.

456 **BEADING MACHINES.** For beading or ornamenting, corrugating and embossing sheet iron stove bodies, pipes and similar work.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Poorman Mfg. Co., Piqua, O.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

457 **BEADING AND FLANGING MACHINES.** For beading and flanging hollow metal ware.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Slaysman & Co., Baltimore, Md.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

458 **BENDING MACHINES.**

459 **Hydraulic.** For bending rails, beams, angles, plate, etc.; the machines being run by hydraulic power.

Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.
Chambersburg Engineering Co., Chambersburg, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Williams, White & Co., Moline, Ill. *See adv. page 44.*

460 **Pipe or Tube.**

Glover Bros., Frankford, Philadelphia, Pa.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Walworth Mfg. Co., 136 Federal St., Boston, Mass.
Wickes Bros., Saginaw, Mich.

461 **Plate.** Having heavy steel rolls for bending metal plate.

Bertsch & Co., Cambridge City, Ind.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Lennox Machine Co., Marshalltown, Ia.
Lewis Foundry & Machine Co., Pittsburg, Pa.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.

462 **BENDING AND FORMING MACHINES.** See 483, Forming and Bending Machines.

463 **BENDING AND STRAIGHTENING MACHINES.** For straightening and bending rails, bars, etc., for ship builders, and for adjustable beams.

Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Flather, Mark, Planer Co., Nashua, N. H.
Hilles & Jones Co., Wilmington, Del.
King Machine Tool Co., Cincinnati, O.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pittsburg Mfg. Co., Pittsburg, Pa. *See adv. page 44.*
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

464 **BROACHING MACHINES AND PRESSES.** For forcing broaches through holes in metal work; usually employed to clean out and form holes of shapes other than circular, such as triangular, square, etc.

Burr, John T., & Son, Kent Ave. and So. 6th St., Brooklyn, N.Y.
Toledo Machine & Tool Co., Toledo, O.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

465 **BUFFING AND POLISHING MACHINES.** For buffing and polishing metal faces.

Besly, Chas. H., & Co., 15-21 Clinton St., Chicago, Ill.
Blount, J. G., & Co., Everett, Mass. *See adv. page 7.*
Bridgeport Safety Emery Wheel Co., Bridgeport, Ct.
Builders Iron Foundry, Providence, R. I.
Cross & Speirs Machine Co., Waterbury, Conn.
Diamond Machine Co., Providence, R. I. *See adv. page 10.*
Hanson & Van Winkle Co., Newark, N. J.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Manville Bros. Co., Waterbury, Conn.
Northampton Emery Wheel Co., Leeds, Mass.
Ransom Mfg. Co., Oshkosh, Wis.
Robinson Automatic Machine Co., Detroit, Mich.
Safety Emery Wheel Co., Springfield, O.
St. Louis Machine Tool Co., St. Louis, Mo.
Springfield Mfg. Co., Bridgeport, Conn. *See adv. pages 34-35.*
Sterling Emery Wheel Mfg. Co., Tiffin, O.
Storey Motor & Electric Co., Inc., Harrison, N. J.
Stow Flexible Shaft Co., 26th and Callowhill Sts., Philadelphia.
Stow Mfg. Co., Binghamton, N. Y.
Watson-Stillman Co., 46 Dey St., New York.
Webster & Perks Tool Co., Springfield, O. *See adv. page 55.*

466 **Gun Barrel.**

Kidder, R. E., Worcester, Mass.

467 **BULLDOZERS.** Massive forming and bending machines in which the dies move in a horizontal plane.

Acme Machinery Co., Cleveland, O.
Ajax Mfg. Co., Cleveland, O. *See adv. page 45.*
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Flather, Mark, Planer Co., Nashua, N. H.
Long & Allstatter Co., Hamilton, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Pittsburg Mfg. Co., Pittsburg, Pa.
Williams, White & Co., Moline, Ill. *See adv. page 44.*

468 **CAR SPRING MACHINERY.** For the manufacture of coil, spiral or elliptical car springs.

Coulter & McKenzie Mch. Co., Bridgeport, Conn.

469 **CARTRIDGE MACHINES.** See also 519, Drop Presses.

Blake & Johnson, Waterbury, Conn.
Foster-Kimball Machine Co., 73-77 Fulton St., Chicago, Ill.
Pratt & Whitney Co., Hartford, Conn.
Waterbury, F. F., & Mch. Co., Waterbury, Conn. *See adv. page 38.*

470 **COINING MACHINES.** See 516, Presses.

471 **COPING MACHINES.** For cutting away the flanges and corners and bending the ends of beams.

Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.

472 **COPING AND NOTCHING MACHINES.** For coping, and at the same time notching at any desired point in the beam.

Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.

473 **CORRUGATING MACHINES.** For corrugating metal plate.

Keene, Geo. C., & Co., Cincinnati, O.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.

474 **CORRUGATING AND SEAMING MACHINES.** For seaming metal and also corrugating it.

Niagara Machine & Tool Works, Buffalo, N. Y.
Poorman Mfg. Co., Piqua, O.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

475 **CRIMPING MACHINES.** Fitted with fluting rollers or dies for corrugating, stamping or compressing tinware, wire, cartridge cases, etc.

Bertsch & Co., Cambridge City, Ind.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Keene, Geo. C., & Co., Cincinnati, O.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

476 **DUST COLLECTORS.** See Finding List.

477 **EMERY JOINTERS.** For making a close joint between the share and mold-board of steel plows.

Williams, White & Co., Moline, Ill.

478 **FILING MACHINES.** For filing metal by power.
Kinsey Burt Co., 136 Liberty St., New York.

479 **Saw.**

Cochrane-Bly Machine Works, Rochester, N. Y.
Rotary File & Machine Co., 425 Kent Ave., Brooklyn, N. Y.

480 **FLANGING MACHINES.** For flanging metal ware.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda, Pa.

FLANGING MACHINES, continued

Keene, Geo. C., & Co., Cincinnati, O.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

481 **FOLDING MACHINES.** For turning locks of different width on any length of sheet, or for folding sheets for conductor pipes, eaves, etc.

Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Poorman Mfg. Co., Piqua, O.
Toledo Machine & Tool Co., Toledo, O.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

482 **FORMING MACHINES.** For forming cylinders, etc.
Blake & Johnson, Waterbury, Conn.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
Niagara Machine & Tool Works, Buffalo, N. Y.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Mch. & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

483 **FORMING AND BENDING MACHINES.** For bending and forming hot or cold bars and forgings.

Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
National Machinery Co., Tiffin, O.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia Pa.
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill.

484 **FURNACES, GAS BLAST.** See Finding List.

485 **GASOLINE APPARATUS.** For use in metal working shops.

Clayton & Lambert Mfg. Co., Detroit, Mich.
Niagara Machine & Tool Works, Buffalo, N. Y.

486 **GROOVING MACHINES.** For producing long furrows, channels, or hollows in sheet metal, iron or tin.

Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

487 **HAMMERS.**

488 **Bumping or Horning.** For closing seams on large cans, canisters, buckets, etc.

Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

HAMMERS, continued

489 **Drop.** Adapted to a large variety of work in embossing and stamping where a straight sided press would interfere.

Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Bremer Machine & Tool Co., Kalamazoo, Mich.
Chambersburg Engineering Co., Chambersburg, Pa. *See adv. page 36.*
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Iroquois Machine Co., 150 Nassau St., New York.
Lane Tool Co., Cleveland, O.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Long & Allstatter Co., Hamilton, O.
Merrill Bros., 465-471 Kent Ave., Brooklyn, N. Y.
Merriman, A. H., Meriden, Conn.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Perkins Machine Co., Warren, Mass.
Toledo Machine & Tool Co., Toledo, O.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.
Williams, White & Co., Moline, Ill. *See adv. page 44.*

490 **Foot Power.** Operated by foot.

Capital City Machine Works, Columbus, O.
Toledo Machine & Tool Co., Toledo, O.
Waterbury, F. F., & Mche. Co., Waterbury, Conn.

491 **Lever Trip.** Operated by a cam or other tripping device which elevates the lever and then allows it to fall.

Long & Allstatter Co., Hamilton, O.
Williams, White & Co., Moline, Ill.

492 **Pneumatic.** Operated by pneumatic pressure.

Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Dallett, Thomas H., Co., York St. & Sedgley Ave., Philadelphia, Pa. *See adv. page 37.*
Haesler-Ingersoll Pneumatic Tool Co., 26 Cortlandt St., N. Y.
Philadelphia Pneumatic Tool Co., 21st. St. & Allegheny Ave., Philadelphia, Pa.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Rand Drill Co., 128 Broadway, New York.
Standard Railway Equipment Co., National Bank of Commerce Bldg., St. Louis, Mo.

493 **Power, Plain.** For general work and operated by power.

American Engineering Works, 204 Dearborn St., Chicago, Ill.
Beaudry & Co., 141 Milk St, Boston, Mass.
Bradley Co., Syracuse, N. Y.
Cox & Sons Co., Bridgeton, N. J.
Dieneit & Eisenhardt, 1304 N. Howard St., Philadelphia, Pa.
Fairbanks Co., Cor. Elm & Broome Sts., New York.
Kane & Roach, Syracuse, N. Y.
Kidder, R. E., Worcester, Mass. *See adv. page 30.*

HAMMERS, POWER, continued

Koch Mfg. Co., Grinnell, Ia.
Lingle, J. H., Bellefonte, Pa.
Long & Allstatter Co., Hamilton, O.
Mayer Bros., Mankato, Minn.
Miami Valley Machine Tool Co., Dayton, O.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Scranton & Co., New Haven, Conn.
Williams, White & Co., Moline, Ill.

494 **Spring.** A comparatively small hammer in which great variation in the force of the blow is controlled by the pressure of the foot on the lever.

Bremer Machine & Tool Co., Kalamazoo, Mich.
Justice, Philip S., & Co., 14 N. 5th St., Philadelphia, Pa.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Scranton & Co., New Haven, Conn.
Williams, White & Co., Moline, Ill.

495 **Steam.** Operated by steam.

Alliance Machine Co., Alliance, O.
American Engineering Works, 204 Dearborn St., Chicago, Ill.
Bell, David, Engineering Works, Buffalo, N. Y.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Chambersburg Engineering Co., Chambersburg, Pa. *See adv. page 36.*
Dudgeon, Richard, 24 Columbia St., New York.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Heppenstall Forge & Knife Co., Pittsburg, Pa.
Lane Tool Co., Cleveland, O.
McDougall & Potter, 606 W. 55th St., New York.
Monighan Machine Works, 813 Carroll Ave., Chicago, Ill.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Tretheway, Samuel, & Co., Ltd., Pittsburg, Pa.

496 **LOCK FOLDING MACHINES.** See also 481, Folding Machines.

Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

497 **MARKING MACHINES.** For putting patent marks on cutlery, gun barrels, auger bits, axes, etc.

Slate, Dwight, Machine Co., Hartford, Conn.

498 **NOTCHING MACHINES.** For notching or nicking metal.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hilles & Jones Co., Wilmington, Del.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Long & Allstatter Co., Hamilton, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Toledo Machine & Tool Co., Toledo, O.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

NOTCHING MACHINES, continued

499 **Fish Plate.** For notching rails, fish plates, etc.

Hilles & Jones Co., Wilmington, Del.

500 **PIPE CALKING MACHINES.** For calking joints on water or gas mains.

Smith, A. P., Mfg. Co., Newark, N. J.

501 **PIPE CUTTING AND THREADING MACHINES.**

Armstrong Mfg. Co., Bridgeport, Conn.
Belden Machine Co., New Haven, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Borden Co., Warren, O.
Clow, James B., & Sons, 344 Franklin St., Chicago, Ill.
Columbus Machine Co., Columbus, O.
Cox & Sons Co., Bridgeton, N. J.
Crane Co., 10 N. Jefferson St., Chicago, Ill.
Curtis & Curtis Co., Bridgepoot, Conn. *See adv. page 74.*
Detrick & Harvey Mch. Co., Baltimore, Md.
Eaton, Cole & Burnham Co., 253 Broadway, New York.
Fairbanks Co., Cor. Elm & Broome Sts., New York.
Fox Machine Co., Grand Rapids, Mich.
Hart Mfg. Co., Cleveland, O.
Jarecki Mfg. Co., Ltd., Erie, Pa.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
McWilliams & McConnell, Shamokin, Pa.
Merrell Mfg. Co., Toledo, O.
Morris, P. Hollingsworth, Philadelphia, Pa.
National Machinery Co., Tiffin, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Oster Mfg. Co., Cleveland, O.
Saunders', D., Sons, Yonkers, N. Y.
Standard Engineering Co., Ellwood City, Pa.
Titusville Iron Co., Titusville, Pa.
Webster & Perks Tool Co., Springfield, O.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Williams Tool Co., Erie, Pa.

502 **Hand Pipe Cutters.**

Barnes Tool Co., New Haven, Conn.
Reed Mfg. Co., Erie, Pa.
Smith, A. P., Mfg. Co., Newark, N. J.
Trimont Mfg. Co., Roxbury, Mass. *See adv. page 70.*

503 **Lead Joint Removers.** For removing old valves from gas and water mains.

Smith, A. P., Mfg. Co., Newark, N. J.

504 **PIPE AND TUBE MILL MACHINERY.**

Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Eddystone Foundry & Machine Co., Eddystone, Pa.
Fischer Foundry & Machine Co., Pittsburg, Pa.
Robertson, John, & Co., 127 Water St., Brooklyn, N. Y.
Tyrone Foundry & Machine Co., Tyrone, Pa.
United Engineering & Foundry Co., Pittsburg, Pa.

505 **PLANERS, PLATE.** See 230, under Machine Tools.

506 **PLANISHING MACHINES.** For planishing britannia or any of the sheet metals.

Poorman Mfg. Co., Piqua, O.

507 **PRESSES.**

508 **Adjustable Inclinable.** Which can be quickly and easily adjusted to upright and inclinable positions.

Adriance Machine Works, 254 Van Brunt St., Brooklyn, N. Y.
Automatic Machine Co., Bridgeport, Conn.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Ferracute Machine Co., Bridgeton, N. J.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Long & Allstatter Co., Hamilton, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Toledo Mch. & Tool Co., Toledo, O.
Vieillard & Oswald Press Co., 93 Pearl St., Brooklyn, N. Y.
Waterbury, F. F., & Mch. Co., Waterbury, Conn.
West Mfg. Co., Buffalo, N. Y.
Wheeler, Frank, & Son, Meriden, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

509 **Armature Disc Notching.**

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Iroquois Machine Co., 150 Nassau St., New York.

510 **Bench.** That can be secured to a bench or work table.

Adams Bros., Providence, R. I.
Automatic Machine Co., Bridgeport, Conn.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Ferracute Machine Co., Bridgeton, N. J.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas. & Co., 61 Clymer St., Brooklyn, N. Y.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Toledo Machine & Tool Co., Toledo, O.
Waterbury, F. F., & Mch. Co., Waterbury, Conn.
West Mfg. Co., Buffalo, N. Y.
Wheeler, Frank, & Son, Meriden, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

511 **Bench, Foot.** That can be secured to a bench or work table and operated by foot.

Adams Bros., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.

PRESSES, BENCH, FOOT, continued

Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Manville Bros. Co., Waterbury, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Toledo Machine & Tool Co., Toledo, O.
Waterbury, F. F., & Mch. Co., Waterbury, Conn. *See adv. page 38.*
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

512 **Blanking.** For heavy punching or swaging, and for heavy blanking of silver-ware and similar work.

Automatic Machine Co., Bridgeport, Conn.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Special Mchy. Co., Bridgeport, Conn.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Mch. Co., Waterbury, Conn.

513 **Broaching.** See 464, Broaching Machines and Presses.

514 **Cabbaging.** For compressing loose sheet metal scrap into convenient form for handling and remelting in crucibles.

Waterbury F. F. & Mch. Co., Waterbury, Conn.

515 **Cam, Double Action.** In which the driving motion is given by a cam.

Automatic Machine Co., Bridgeport, Conn.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Ferracute Machine Co., Bridgeton, N. J.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Merriman, A. H., Meriden, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Machine Co., Waterbury, Conn.
Waterbury Mch. Co., Waterbury, Conn. *See adv. page 51.*

516 **Coining.** For making metal planchets from which to stamp coins.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.

PRESSES, COINING, continued

Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Ferracute Machine Co., Bridgeton, N. J.
Henderson Mch. Co., 5032 Germantown Ave., Philadelphia, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Machine Co., Waterbury, Conn.

517 **Crank.** See 530, Plain Power Presses.

518 **Drawing.** For drawing sheet metal into various forms as in making tin boxes, bells, bicycle fittings, etc.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
Merriman, A. H., Meriden, Conn.
Perkins Machine Co., Warren, Mass.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Machine Co., Waterbury, Conn.
Waterbury Mch. Co., Waterbury, Conn.
West Mfg. Co., Buffalo, N. Y.

519 **Drop.** For forging, stamping, etc.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Chambersburg Engineering Co., Chambersburg, Pa.
Cross & Speirs Machine Co., Waterbury, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Johnson, I. H., Co., Inc., 337 N. 15th St., Philadelphia, Pa.
Long & Allstatter Co., Hamilton, O.
Manville Bros. Co., Waterbury, Conn.
Miner & Peck Mfg. Co., New Haven, Conn. *See adv. page 36.*
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Pratt & Whitney Co., Hartford, Conn.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Waterbury Mch. Co., Waterbury, Conn.
West Mfg. Co., Buffalo, N. Y.
Williams, White & Co., Moline, Ill.

520 **Embossing.** For embossing or stamping raised designs on britannia or other sheet metal.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Burroughs, Charles, Co., Newark, N. J.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Ferracute Machine Co., Bridgeton, N. J.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Merriman, A. H., Meriden, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.

PRESSES, EMBOSSING, continued

Perkins Machine Co., Warren, Mass.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Watson-Stillman Co., 46 Dey St., New York.
West Mfg. Co., Buffalo, N. Y.

521 **Folding and Seaming.** For seaming and also folding; the blanks being rolled from the flat, not having previously formed hooks to interfere with the operation.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

522 **Foot.** Operated by foot.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Consolidated Press & Tool Co., 96 N. Clinton St., Chicago, Ill.
Cross & Speirs Machine Co., Waterbury, Conn.
Ferracute Machine Co., Bridgeton, N. J.
Gould & Eberhardt, Newark, N. J. *See adv. page 24.*
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Lloyd, John, 558 Water St., New York.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Perkins Machine Co., Warren, Mass.
Pratt & Whitney Co., Hartford, Conn.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Shuster, F. B., Co., New Haven, Conn.
Slaysman & Co., Baltimore, Md.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Mch. Co., Waterbury, Conn. *See adv. page 38.*
Waterbury Mch. Co., Waterbury, Conn.
West Mfg. Co., Buffalo, N. Y.
Wheeler, Frank, & Son, Meriden, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

523 **Forcing.** For forcing one piece into another, such as shafts, bushings, etc.

Lucas Machine Tool Co., Cleveland, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Watson-Stillman Co., 46 Dey St., New York.

524 **Forging.** For forging metal by pressure between formers.

Acme Machinery Co., Cleveland, O.
Beaudry & Co., 141 Milk St., Boston, Mass.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.

PRESSES, FORGING, continued

Bremer Machine & Tool Co., Kalamazoo, Mich.
Chambersburg Engineering Co., Chambersburg, Pa.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill.

525 **Horning.** For closing the side seams in pieced tinware; also for other work requiring horn dies.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

526 **Hydraulic.** Operated by hydraulic pressure.

Brandywine Machine Co., Wilmington, Del.
Burroughs, Charles, Co., Newark, N. J.
Caldwell, E. R., & Co., Braddock, Pa.
Chambersburg Engineering Co., Chambersburg, Pa. *See adv. page 36.*
Dudgeon, Richard, 24 Columbia St., New York.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Harrison & Watson Co., 1708 Ludlow St., Philadelphia, Pa.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Morgan Construction Co., Worcester, Mass.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Williams, White & Co., Moline, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

527 **Knuckle Joint.** For embossing and stamping sheet metal and for heavy sub-press work.

Blake & Johnson, Waterbury, Conn.
Cross & Speirs Machine Co., Waterbury, Conn.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Merriman, A. H., Meriden, Conn.
Robinson, J. M., Mfg. Co., Cincinnati, O.

528 **Lever Foot.** Having lever motion and operated by foot.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Ferracute Machine Co., Bridgeton, N. J.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Manville, E. J., Machine Co., Waterbury, Conn.

PRESSES, LEVER, FOOT, continued

Manville Bros. Co., Waterbury, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Toledo Machine & Tool Co., Toledo, O.
Wheeler, Frank, & Son, Meriden, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

529 **Perforating.** For perforating tin and other sheet metal.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Long & Allstatter Co., Hamilton, O.
Merriman, A. H., Meriden, Conn.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

530 **Power, Plain.** For general work, and operated by power.

Adams Bros., Providence, R. I.
Adriance Machine Works, 254 Van Brunt St., Brooklyn, N. Y.
Automatic Machine Co., Bridgeport, Conn.
Bertsch & Co., Cambridge City, Ind.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Buescher Mfg. Co., Elkhart, Ind.
Consolidated Press & Tool Co., 96 N. Clinton St., Chicago, Ill.
Coulter & McKenzie Machine Co., Bridgeport, Conn.
Cleveland Punch & Shear Works Co., Cleveland, O.
Cross & Speirs Machine Co., Waterbury, Conn.
Delivouk & George, 133-137 S. Clinton St., Chicago, Ill.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Ferracute Machine Co., Bridgeton, N. J.
Fox Machine Co., Grand Rapids, Mich.
Henderson Machine Co., 5032 Germantown Ave., Philadelphia.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Long & Allstatter Co., Hamilton, O.
Manville Bros. Co., Waterbury, Conn.
Merriman, A. H., Meriden, Conn.
Michigan Machinery Mfg. Co., Ypsilanti, Mich.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Nilson, A. H., Machine Co., Bridgeport, Conn.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Perkins Machine Co., Warren, Mass.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Shuster, F. B., Co., New Haven, Conn.
Slaysman & Co., Baltimore, Md.

PRESSES, POWER, continued

Toledo Machine & Tool Co., Toledo, O.
Vieillard & Oswald Press Co., 93 Pearl St., Brooklyn, N. Y.
Waterbury F. F. & Mch. Co., Waterbury, Conn. *See adv. page 38.*
Waterbury Machine Co., Waterbury, Conn.
West Mfg. Co., Buffalo, N. Y.
Wheeler, Frank, & Son, Meriden, Conn.
Williams, White & Co., Moline, Ill.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

531 **Punching.** For punching and cutting bars and heavy sheet metal; trimming drop forgings, etc.

Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Capital City Machine Works, Columbus, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Cross & Speirs Machine Co., Waterbury, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Ferracute Machine Co., Bridgeton, N. J.
Fox Machine Co., Grand Rapids, Mich.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Long & Allstatter Co., Hamilton, O.
Michigan Machinery Mfg. Co., Ypsilanti, Mich.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Perkins Machine Co., Warren, Mass.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Waterbury Mch. Co., Waterbury, Conn. *See adv. page 51.*
West Mfg. Co., Buffalo, N. Y.
Wheeler, Frank, & Son, Meriden, Conn.
Williams, White & Co., Moline, Ill.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

532 **Screw.** In which the pressure is applied by a screw; designed for a heavier class of work than is usually done by foot or hand presses.

Adams Bros., Providence, R. I.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Mch. Co., 109-115 N. 22d St., Philda.
Ferracute Machine Co., Bridgeton, N. J.
Henderer's, A. L., Sons, Wilmington, Del.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.
Waterbury Machine Co., Waterbury, Conn.
West Mfg. Co., Buffalo, N. Y.
Wheeler, Frank, & Son, Meriden, Conn.

PRESSES, SCREW, continued

Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

533 **Stamping.** See 520, Embossing Presses.

534 **Straight Sided.** For heavy work requiring great rigidity, accuracy and strength.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.

535 **Sub.** For all delicate work which requires accuracy and where each finished part must be identical.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Pratt & Whitney Co., Hartford, Conn.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.

536 **Trimming.** For heavy blanking, drawing or for trimming drop forgings.

Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Merrill Bros., 465-471 Kent Ave., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Pratt & Whitney Co., Hartford, Conn.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Toledo Machine & Tool Co., Toledo, O.

537 **PRICKING AND SHEARING MACHINES.** For marking off the distance on sheet metal; it is also adapted for use as a shear.

Ohl, Geo. A., & Co., Inc., Newark, N. J.

538 **PROFILING MACHINES.** See 232 under Machine Tools.

539 **PUNCHES.**

540 **Beam.** For bridge and girder work, or work of a similar nature.

Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
King Machine Tool Co., Cincinnati, O.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Watson-Stillman Co., 46 Dey St., New York.

PUNCHES, BEAM, continued

Williams, White & Co., Moline, Ill.

541 **Cutting-Off.** For cutting off bars of steel or iron.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
King Machine Tool Co., Cincinnati, O.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Whitcomb Mfg. Co., Worcester, Mass. *See adv. page 50.*
Williams, White & Co., Moline, Ill.

542 **Fish Plate.** For punching rails, fish plates, etc.

Cincinnati Punch & Shear Co., Cincinnati, O.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Williams, White & Co., Moline, Ill.

543 **Gang or Multiple.** For punching complete or broken rows of holes at one stroke.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hilles & Jones Co., Wilmington, Del.
Kane & Roach, Syracuse, N. Y.
King Machine Tool Co., Cincinnati, O.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Williams, White & Co., Moline, Ill.

544 **Hand.** Operated by hand.

Anderson, W. H., & Sons, Inc., Detroit, Mich.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Bremer Machine & Tool Co., Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Patterson Tool & Supply Co., Dayton, O.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Watson-Stillman Co., 46 Dey St., New York.
Whitcomb Mfg. Co., Worcester, Mass.
Young, W. C., Mfg. Co., Worcester, Mass.

PUNCHES, continued

545 **Hydraulic.** Operated by hydraulic pressure.

Dudgeon, Richard, 24 Columbia St., New York.
Henderer's, A. L., Sons, Wilmington, Del.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Williams, White & Co., Moline, Ill. *See adv. page 44.*

546 **Lever.** On which the pressure or motion is exerted by a lever.

New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Patterson Tool & Supply Co., Dayton, O.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Watson-Stillman Co., 46 Dey St., New York.

547 **Pneumatic.** Operated by pneumatic pressure.

Pedrick & Ayer Co., Plainfield, N. J.
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Slocomb, F. F., & Co., Wilmington, Del. *See adv. page 37.*

548 **Power.** For general work and driven by power.

Beaudry & Co., 141 Milk St., Boston, Mass.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Bremer Machine & Tool Co., Kalamazoo, Mich.
Buescher Mfg. Co., Elkhart, Ind.
Century Machine & Mfg. Co., Mansfield, O.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Watson-Stillman Co., 46 Dey St., New York.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.
Young, W. C., Mfg. Co., Worcester, Mass. *See adv. page 27.*

549 **Screw.** Having the pressure applied by a screw.

Henderer's, A. L., Sons, Wilmington, Del.
Watson-Stillman Co., 46 Dey St., New York.

550 **PUNCHING MACHINES.** For punching beam flanges and heavy work.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Slocomb, F. F., & Co., Wilmington, Del. *See adv. page 37.*
Thompson, Alexander, Fitchburg, Mass.

PUNCHING MACHINES, continued

Toledo Machine & Tool Co., Toledo, O.
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill.

551 **Pick Eye.** For forming a complete pick eye from the rough bar.

Birmingham Iron Foundry, Derby, Conn.

552 **PUNCHING AND COPING MACHINES.** For punching and also coping metal.

Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Toledo Machine & Tool Co., Toledo, O.
Williams, White & Co., Moline, Ill.

553 **PUNCHING, COPING AND SHEARING MACHINES.** For combined punching, coping and shearing.

Cleveland Punch & Shear Works Co., Cleveland, O.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.

554 **PUNCHING AND FORMING MACHINES.** For punching and forming metal.

Blake & Johnson, Waterbury, Conn.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
New Doty Mfg. Co., Janesville, Wis.
Reade Machinery Co., Cleveland, O.

555 **PUNCHING AND SHEARING MACHINES.** For punching and shearing metal.

Badger State Machine Co., Janesville, Wis.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Bremer Machine & Tool Co., Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Colton, G. D., & Co., Inc., Galesburg, Ill.
Faikenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
King Machine Tool Co., Cincinnati, O.
Koch Mfg. Co., Grinnell, Ia.
Lingle, J. H., Bellefonte, Pa.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*

PUNCHING AND SHEARING MACHINES, continued

Perkins Machine Co., Warren, Mass.
Rock River Machine Co., Janesville, Wis.
Royersford Foundry & Machine Co., Royersford, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Sennett, George B., Co., Youngstown, O.
Toledo Machine & Tool Co., Toledo, O.
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

556 **RIVET MACHINES.** For making rivets from metal rods.

Acme Machinery Co., Cleveland, O.
Ajax Mfg. Co., Cleveland, O.
Blake & Johnson, Waterbury, Conn.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
National Machinery Co., Tiffin, O.
Waterbury Machine Co., Waterbury, Conn.

557 **RIVETING MACHINES.** For riveting plates or other metal work.

Albree, Chester B., Iron Works, Allegheny, Pa.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Capital City Machine Works, Columbus, O.
Cross & Speirs Machine Co., Waterbury, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
General Pneumatic Tool Co., Montour Falls, N. Y.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Root Bros. Co., Plymouth, O.
Shuster, F. B., Co., New Haven, Conn. *See adv. page 42.*
Toledo Machine & Tool Co., Toledo, O.
Williams, White & Co., Moline, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

558 **Hydraulic.** Operated by hydraulic pressure.

Chambersburg Engineering Co., Chambersburg, Pa. *See adv. page 36.*
Harrison & Watson Co., 1708 Ludlow St., Philadelphia, Pa.
Niles-Bement-Pond Co., 136 Liberty St., New York. *See adv. page 63.*
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Watson-Stillman Co., 46 Dey St., New York.

559 **Pneumatic.** Operated by pneumatic pressure.

Albree, Chester B., Iron Works, Allegheny, Pa.
Allen, John F., 370 Gerard Ave., New York.
Cleveland Pneumatic Tool Co., 2d Ave. near Penna. R. R., Cleveland, O.
Dallett, Thomas H., Co., York St. & Sedgley Ave., Philadelphia, Pa. *See adv. page 37.*
Pedrick & Ayer Co., Plainfield, N. J.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Slocomb, F. F., & Co., Wilmington, Del. *See adv. page 37.*

RIVETING MACHINES, PNEUMATIC, continued

Standard Railway Equipment Co., National Bank of Commerce Bldg., St. Louis, Mo.

560 **Portable.**

Niles-Bement-Pond Co., 136 Liberty St., New York.

561 **ROLLING MILLS.** For rolling, figuring and ornamenting sheet metal.

Adams Bros., Providence, R. I.
Birmingham Iron Foundry, Derby, Conn.
Blake & Johnson, Waterbury, Conn.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Inland Tool & Mfg. Co., 240 W. Lake St., Chicago, Ill.
Iroquois Machine Co., 150 Nassau St., New York.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Rowbottom Machine Co., Inc., Waterbury, Conn.
Standard Machinery Co., Providence, R. I.
Wheeler, Frank, & Son, Meriden, Conn.

562 **ROOFING MACHINES.** For making iron and steel roofing.

Niagara Machine & Tool Works, Buffalo, N. Y.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M., Mfg. Co., Cincinnati, O.

563 **SAW MACHINES, BAND.** In which the saw is toothed on one edge and runs between two flat faced band wheels.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Thompson, Henry G., & Son Co., New Haven, Conn.
Wright, Chas. E., Co., New Orange, N. J.

564 **Circular.** For cutting metal, the saw being of circular form.

Binghamton Machine Tool Works, Binghamton, N. Y.
Clark, Jas., Jr., & Co., Louisville, Ky.
Cleveland Punch & Shear Works Co., Cleveland, O.
Cochrane-Bly Machine Works, Rochester, N. Y.
Diamond Drill & Machine Co., Birdsboro, Pa.
Espen-Lucas Machine Works, Broad & Noble Sts., Philda.
Ham, L. M., & Co., 152 Portland St., Boston, Mass.
Higley Machine Tool Co., Croton Falls, N. Y.
Keystone Machine Tool Works, 1037 Ridge Ave., Philadelphia.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Massachusetts Saw Works, Springfield, Mass.
Newton Machine Tool Works, Inc., 24th & Vine Sts., Philda.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Nutter, Barnes & Co., 366 Atlantic Ave., Boston, Mass.
Patterson Tool & Supply Co., Dayton, O.
Pratt & Whitney Co., Hartford, Conn. *See adv. page 62.*
Railway Appliances Co., Old Colony Bldg., Chicago, Ill.
Resek Machine Tool Co., Cleveland, O.
Tindel-Morris Co., Eddystone, Pa.

565 **SAW TABLES.** Tables securely riveted to a base, having grooves fitted on each side of the saw so that right and left hand mitres can be cut.

Colburn Machine Tool Co., Franklin, Pa.
Grabo, E. O., 182 Centre St., New York. *See adv. page 56.*
Hazelton & Donald Mche. Co., 612 Discount Pl., Philadelphia.

566 **SEAMING MACHINES, DOUBLE.** For double seaming the bottoms of tin cans, etc.

Ams, Max, Machine Co., 372 Greenwich St., New York.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Perkins Machine Co., Warren, Mass.
Slaysman & Co., Baltimore, Md.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

567 **SEAMING AND WIRING MACHINES.** For putting an imitation wire on the bodies of pails, buckets, etc., and double seaming the bottom at the same time.

Niagara Machine & Tool Works, Buffalo, N. Y.
Toledo Machine & Tool Co., Toledo, O.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

568 **SHEARS.**

569 **Alligator.** In which the moving knife or cutter works on a pivot.

Carlin's, Thos., Sons Co., Allegheny, Pa.
Cleveland Punch & Shear Works Co., Cleveland, O.
Lingle, J. H., Bellefonte, Pa.
National Machinery Co., Tiffin, O.
New Doty Mfg. Co., Janesville, Wis.
Philadelphia Roll & Machine Co., Philadelphia, Pa.
Toledo Machine & Tool Co., Toledo, O.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
West Mfg. Co., Buffalo, N. Y.

570 **Bar.** For cutting bars of iron or steel.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hilles & Jones Co., Wilmington, Del.
King Machine Tool Co., Cincinnati, O.
Long & Allstatter Co., Hamilton, O.
Merrill Bros., 465-471 Kent Ave., Brooklyn, N. Y.
Mersick, C. S., & Co., New Haven, Conn.
Newbold, R. S., & Son Co., Norristown, Pa.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Sellers, Wm., & Co, Inc., 1600 Hamilton St., Philadelphia, Pa.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Williams, White & Co., Moline, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

SHEARS, continued

571 **Bench.** See 582, Lever Shears.

572 **Bevel.** For cutting bevel edges instead of the usual vertical edges.

Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Lennox Machine Co., Marshalltown, Ia.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Peck, Stow & Wilcox Co., Southington, Conn.
Thompson, Alex., Fitchburg, Mass.
Williams, White & Co., Moline, Ill.

573 **Bloom and Billet.** For cutting blooms and billets.

Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Long & Allstatter Co., Hamilton, O.
Morgan Construction Co., Worcester, Mass.
New Doty Mfg. Co., Janesville, Wis.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*
Williams, White & Co., Moline, Ill.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

574 **Circle.** For cutting internal and external circles, armature disks, rings, etc.

Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Long & Allstatter Co., Hamilton, O.
Newbold, R. S., & Son Co., Norristown, Pa.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Perkins Machine Co., Warren, Mass.
West Mfg. Co., Buffalo, N. Y.
Williams, White & Co., Moline, Ill.

575 **Clipping.** For clipping small busheling scrap, or for clipping off light bar iron.

Carlin's, Thos., Sons Co., Allegheny, Pa.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Williams, White & Co., Moline, Ill.

576 **Double Angle.** For cutting right and left hand to a mitre as well as at right angles.

Bertsch & Co., Cambridge City, Ind.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Williams, White & Co., Moline, Ill.

577 **Doubling, Tin Plate.** For doubling and marking down the sheet; after it is flat the shear side cuts.

Cincinnati Punch & Shear Co., Cincinnati, O.

SHEARS, DOUBLING, continued

Lewis Foundry & Machine Co., Pittsburg, Pa.
Long & Allstatter Co., Hamilton, O.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.

578 **Gap.** Of the squaring shear style with housings, having an open throat to permit of cutting apart sheets of any length.

Bertsch & Co., Cambridge City, Ind.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
King Machine Tool Co., Cincinnati, O.
Long & Allstatter Co., Hamilton, O.
Mersick, C. S., & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Vulcan Foundry & Machine Co., New Castle, Pa.
West Mfg. Co., Buffalo, N. Y.
Whiting, George, Co., Chicago, Ill.
Williams, White & Co., Moline, Ill.

579 **Gate.** Of the squaring shear style made for heavy work.

Carlin's, Thos., Sons Co., Allegheny, Pa.
Cincinnati Punch & Shear Co., Cincinnati, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
King Machine Tool Co., Cincinnati, O.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill. *See adv. page 44.*

580 **Guillotine.** See 579, Gate Shears.

581 **Hand.** For light material such as snips.

Bremer Machine & Tool Co., Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Gallagher Mfg. Co., Lynn, Mass.
Keene, Geo. C., & Co., Cincinnati, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Peck, Stow & Wilcox Co., Southington, Conn.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Whitcomb Mfg. Co., Worcester, Mass.
Young, W. C., Mfg. Co., Worcester, Mass.

582 **Lever.** Open end shears in which the movable knife is operated by means of a hand lever.

Carlin's, Thos., Sons Co., Allegheny, Pa.
Lewis Foundry & Machine Co., Pittsburg, Pa.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Pawtucket Mfg. Co., Pawtucket, R. I.

SHEARS, LEVER, continued

Peck, Stow & Wilcox Co., Southington, Conn.
Sweetser, William A., Brockton, Mass.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill.

583 **Plate.** For cutting apart sheets of any length and width.

Bertsch & Co., Cambridge City, Ind.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Hilles & Jones Co., Wilmington, Del.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Mesta Machine Co., Pittsburg, Pa.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York.
West Penn Fdy. & Mch. Co., Avonmore, Pa.
Young, W. C., Mfg. Co., Worcester, Mass.

584 **Power, Plain.** For light material; power driven squaring shears without gearing.

Alliance Machine Co., Alliance, O.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Bremer Machine & Tool Co., Kalamazoo, Mich.
Century Machine Mfg. Co., Mansfield, O.
Cincinnati Punch & Shear Co., Cincinnati, O.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Heppenstall Forge & Knife Co., Pittsburg, Pa.
Hilles & Jones Co., Wilmington, Del.
Kane & Roach, Syracuse, N. Y.
King Machine Tool Co., Cincinnati, O.
Long & Allstatter Co., Hamilton, O.
Morgan Construction Co., Worcester, Mass.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Perkins Machine Co., Warren, Mass.
Toledo Machine & Tool Co., Toledo, O.
Watson-Stillman Co., 46 Dey St., New York.
West Mfg. Co., Buffalo, N. Y.
Williams, White & Co., Moline, Ill.
Young, W. C., Mfg. Co., Worcester, Mass. *See adv. page 27.*

585 **Rotary.** See 588, Slitting Shears.

586 **Scrap.** For cutting apart pieces of scrap and putting them into marketable shape.

Carlin's, Thos., Sons Co., Allegheny, Pa.
Hilles & Jones Co., Wilmington, Del.
New Doty Mfg. Co., Janesville, Wis.
Toledo Machine & Tool Co., Toledo, O.
Vulcan Foundry & Machine Co., New Castle, Pa.

587 **Scroll.** For cutting scrolls and irregular shapes.

Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Watson-Stillman Co., 46 Dey St., New York.

SHEARS, continued

588 **Slitting, Rotary.** Having rotary cutters arranged for slitting sheet metal.

Adams Bros., Providence, R. I.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Detrick & Harvey Machine Co., Baltimore, Md.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Long & Allstatter Co., Hamilton, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Pawtucket Mfg. Co., Pawtucket, R. I.
Peck, Stow & Wilcox Co., Southington, Conn.
Perkins Machine Co., Warren, Mass.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M., Mfg. Co., Cincinnati, O.
Thompson, Alex., Fitchburg, Mass.
Toledo Machine & Tool Co., Toledo, O.
Watson-Stillman Co., 46 Dey St., New York.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

589 **Squaring.** With the cutter bar guided at both ends.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cincinnati Punch & Shear Co., Cincinnati, O.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.
Keene, Geo. C., & Co., Cincinnati, O.
King Machine Tool Co., Cincinnati, O.
Lewis Foundry & Machine Co., Pittsburg, Pa.
Long & Allstatter Co., Hamilton, O.
Merriman, A. H., Meriden, Conn.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Toledo Machine & Tool Co., Toledo, O.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York.
West Mfg. Co., Buffalo, N. Y.
Wheeler, Frank, & Son, Meriden, Conn.
Williams, White & Co., Moline, Ill.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

590 **Universal or Splitting.** See also 578, Gap Shears.

Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
United Engineering & Foundry Co., Pittsburg, Pa.
Whitcomb Mfg. Co., Worcester, Mass. *See adv. page 50.*
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

SHEARS, continued

591 **Vertical or Upright.** See also 570, Bar Shears.

Lewis Foundry & Machine Co., Pittsburg, Pa.
Pawtucket Mfg. Co., Pawtucket, R. I.
United Engineering & Foundry Co., Pittsburg, Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
Watson-Stillman Co., 46 Dey St., New York. *See adv. page 41.*

592 **SHEAR PUNCH AND ANGLE BENDERS.** For shearing, punching and bending in one operation, or separately.

Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
New Doty Mfg. Co., Janesville, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Ohl, Geo. A., & Co., Inc., Newark, N. J.
Williams, White & Co., Moline, Ill.

593 **SHOVEL MACHINERY.**

Bertsch & Co., Cambridge City, Ind.
Toledo Machine & Tool Co., Toledo, O.
West St. Louis Mch. & Tool Co., 606 Manchester Ave., St. Louis, Mo.

594 **SLITTING MACHINES.** For slitting metal. See also 588, Slitting Shears.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hibbard, W. H. Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
New Doty Mfg. Co., Janesville, Wis.
Niagara Machine & Tool Works, Buffalo, N. Y.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Watson-Stillman Co., 46 Dey St., New York.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

595 **Gang or Multiple.** For slitting metal into numbers of strips in one operation.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Manville Bros. Co., Waterbury, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Waterbury Machine Co., Waterbury, Conn.
Watson-Stillman Co., 46 Dey St., New York.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

596 **SMOOTHING ROLLS.** For smoothing off the burrs on large blanks cut in dies.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.

597 **SOLDER CUTTERS.** For cutting solder into equal drops.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.

SOLDER CUTTERS, continued

Niagara Machine & Tool Works, Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

598 **SOLDER MOLDS.** For molding solder into bars or other shapes.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

599 **SOLDERING FRAMES AND CYLINDERS.** For gaging and holding the side seams of bodies while being soldered.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

600 **SOLDERING MACHINES.** For use in the manufacture of cans.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

601 **SPRUE CUTTERS.** For use by manufacturers of soft metal castings.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
Merriman, A. H., Meriden, Conn.
Niagara Machine & Tool Works, Buffalo, N. Y.
Perkins Machine Co., Warren, Mass.
Shuster, F. B., Co., New Haven, Conn. *See adv. page 42.*
Waterbury F. F. & Mch. Co., Waterbury, Conn.

602 **SQUEEZING MACHINES.** For squeezing or crimping on the top of square, oblong or irregular shaped cans.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hibbard, W. H., Mfg. Co., 79 Washington St., Brooklyn, N. Y.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

603 **STOVE PIPE AND ELBOW MACHINES.** For cutting and punching the two edges of stove pipe and elbow plates at one stroke.

Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A., & Co., Inc., Newark, N. J.

604 **STRAIGHTENING MACHINES.** For straightening shafting, bars, etc.

Betts Machine Co., Wilmington, Del.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Fitchburg Machine Works, Fitchburg, Mass.
Hartford Machine Screw Co., Hartford, Conn.
Johnson, I. H., Co., Inc., 337 No. 15th St., Philadelphia, Pa.

STRAIGHTENING MACHINES, continued

Kane & Roach, Syracuse, N. Y.
Lewis Foundry & Machine Co., Pittsburg, Pa.
New Doty Mfg. Co., Janesville, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Watson-Stillman Co., 46 Dey St., New York.

605 **Plate.** For straightening metal plate.

Cleveland Punch & Shear Works Co., Cleveland, O.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, O.
Newbold, R. S., & Co., Norristown, Pa.
New Doty Mfg. Co., Janesville, Wis.
Niles-Bement-Pond Co., 136 Liberty St., New York.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Watson-Stillman Co., 46 Dey St., New York.

606 **Rail.** For straightening rails.

Cleveland Punch & Shear Works Co., Cleveland, O.
Hilles & Jones Co., Wilmington, Del.
Kane & Roach, Syracuse, N. Y.
Long & Allstatter Co., Hamilton, O.
Pittsburg Mfg. Co., Pittsburg, Pa. *See adv. page 44.*
Watson-Stillman Co., 46 Dey St., New York.
Williams, White & Co., Moline, Ill.

607 **SWAGING MACHINES.** See 653 under Wire Working Machinery.

608 **Sheet Metal.** For swaging sheet metal by stamping or pressing.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.

609 **TESTING MACHINES.** For testing the strength of metals.

Olsen, Tinius & Co., 500 N. 12th St., Philadelphia, Pa.
Riehle Bros. Testing Mch. Co., 1424 N. 9th St, Philadelphia.

610 **TINSMITHS' MACHINERY.**

611 **Burring Machines.** Rotary machines for bending up the edges of sheet metal.

Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.

612 **Elbow Edging Machines.** For putting elbows together.

Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.

613 **Rim Machines.** For forming, flaring and edging straight strips of tin into perfect rims in one operation.

Kane & Roach, Syracuse, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.

TINSMITHS' MACHINERY, continued

614 **Setting Down Machines.** For tightening the seams so as to prevent any solder leaking in.

Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

615 **Trimming Machines.** For trimming edges of round covers and other drawn work left uneven by dies.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philda.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

616 **Trimming and Beading Machines.** For trimming and beading metal boxes, covers, etc.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Falkenau-Sinclair Machine Co., 109-115 N. 22d St., Philada.
Leffler, Chas., & Co., 61 Clymer St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

617 **Tube Forming Machines.** For forming tubes or cylinders.

Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

618 **Turning Machines.** For turning edges to be seamed.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.

619 **WELDING MACHINES.** See 40, under Blacksmiths' Machinery.

620 **Electric.** Operated by electricity.

Standard Welding Co., Cleveland, O.
Thomson Electric Welding Co., Lynn, Mass.

---

621 WIRE MAKING AND WIRE WORKING MACHINES AND TOOLS.

622 **BAKERS.** Ovens through which the wire is passed to make it soft or more pliable for drawing.

Bates Machine Co., Joliet, Ill.
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*

623 **BUCKLE TONGUE MACHINES.** For making harness and trace buckle tongues from wire.

Shuster, F. B., Co., New Haven, Conn.

624 **BULL BLOCKS.** For drawing wire and rods.

Morgan Construction Co., Worcester, Mass.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Waterbury Mch. Co., Waterbury, Conn. *See adv. page 51.*

625 **CHISELS.** For cutting and clipping wire.

Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.

626 **COILERS.** For reducing wire after it has come from the draw bench; also for coiling slit wire rods to be made into brass wire.

Hoefer Mfg. Co., Freeport, Ill.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

627 **CUTTERS.** For cutting wire into desired lengths after it has been straightened.

Blake, George F., Mfg. Co., 114 Liberty St., New York.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
King, J. M., & Co., Waterford, N. Y.
Manville Bros. Co., Waterbury, Conn.
Manville, E. J., Machine Co., Waterbury, Conn.
Shuster, F. B., Co., New Haven, Conn. *See adv. page 42.*
Waterbury Machine Co., Waterbury, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

628 **Hand.** For cutting wire by hand.

Billings & Spencer Co., Hartford, Conn.
Cronk & Carrier Mfg. Co., Elmira, N. Y.
Kilborn & Bishop Co., New Haven, Conn.
Shuster, F. B., Co., New Haven, Conn.

629 **CUTTERS AND BAIL FORMERS.** For cutting and forming wire into bails or handles, etc.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Shuster, F. B., Co., New Haven, Conn.

630 **CUTTING AND MILLING MACHINES, AUTOMATIC.** For automatically cutting wire into desired lengths and milling the ends.

Shuster, F. B., Co., New Haven, Conn. *See adv. page 42.*
Waterbury Machine Co., Waterbury, Conn.

631 **DRAW BENCHES.** For drawing wire from rods; it being drawn through plates with successively smaller openings.

Bates Machine Co., Joliet, Ill.
Braddock Machine & Mfg. Co., Braddock, Pa.
Iroquois Machine Co., 150 Nassau St., New York.
Morgan Construction Co., Worcester, Mass.
Oliver, W. W., Mfg. Co., 1485 Niagara St., Buffalo, N. Y.
Richard Mfg. Co., Bloomsburg, Pa.
Trenton Iron Co., Trenton, N. J.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*

DRAW BENCHES, continued

Waterbury F. F. & Mch. Co., Waterbury, Conn.
Waterbury Machine Co., Waterbury, Conn.

632 **DRAWING MACHINES.** See 631, Draw Benches.

633 **FORMERS.** For forming wire into all the various shapes necessary in the production of wire goods.

Automatic Machine Co., Greenfield, Mass.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Cross & Speirs Machine Co., Waterbury, Conn.
Hoefer Mfg. Co., Freeport, Ill.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
Nilson, A. H., Machine Co., Bridgeport, Conn.
Shuster, T. B., Co., New Haven, Conn.
Special Mchy. Co., Bridgeport, Conn.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Waterbury Mch. Co., Waterbury, Conn. *See adv. page 51.*
Webster & Perks Tool Co., Springfield, O.

634 **Bail.** Especially for forming bails, handles, etc.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

635 **Ring.** See 660, Winders.

636 **GALVANIZING MACHINERY.** For the galvanic process of covering wire with a metallic coating; electroplating.

Bates Machine Co., Joliet, Ill.
Michigan Machinery Mfg. Co., Ypsilanti, Mich.
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*

637 **GATE HOOK MACHINES, AUTOMATIC.** For producing complete gate hooks or other large hooks.

Blake & Johnson, Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Shuster, F. B., Co., New Haven, Conn.

638 **GAGES.** For measuring wire and determining the number or size of the wire.

Atkins, E. C., & Co., Indianapolis, Ind.
Brown & Sharpe Mfg. Co., Providence, R. I.
Disston, Henry & Sons, Tacony & N. Front Sts., Philadelphia.
Peck, Stow & Wilcox Co., Southington, Conn.
Standard Tool Co., Cleveland, O.
Starrett, L. S., Co., Athol, Mass.

639 **HANDLE MACHINES.** For taking wire from coils, straightening, cutting and forming it into oval or oblong hoops or handles.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.

HANDLE MACHINES, continued

Niagara Machine & Tool Works, Buffalo, N. Y.
Shuster, F. B., Co., New Haven, Conn.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

640 MILLING MACHINES. See 223, under Machine Tools.

641 MUFFLERS. Ovens or furnaces usually of clay used where direct action of heat is not required.

Bates Machine Co., Joliet, Ill.
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*

642 NAIL MACHINERY. For the production of wire nails.

Bates Machine Co., Joliet, Ill.
Blake & Johnson, Waterbury, Conn.
Spicer Mfg. Co., New Philadelphia, O.

643 PLIERS. Small hand tools used for cutting or bending wire.

Athol Machine Co., Athol, Mass.
Billings & Spencer Co., Hartford, Conn.
Bridgeport Mfg. Co., Bridgeport, Conn.
Cronk & Carrier Mfg. Co., Elmira, N. Y.
King, J. M., & Co., Waterford, N. Y.
Logan & Strowbridge Iron Co., New Brighton, Pa.
Morrill, Chas., 277 Broadway, New York.
Peck, Stow & Wilcox Co., Southington, Conn.
Reed Mfg. Co., Erie, Pa.
Standard Tool Co., Athol, Mass.
Tower & Lyon, 95 Chambers St., New York.
Utica Drop Forge & Tool Co., Utica, N. Y.

644 POINTING MACHINES. For tapering the ends of wire or making sharp pin points on steel, brass or German silver wire.

Bates Machine Co., Joliet, Ill.
Blake & Johnson, Waterbury, Conn.
Excelsior Needle Co., Torrington, Conn. *See adv. page 38.*
Goodyear, S. W., Waterbury, Conn. *See adv. page 38.*
Langelier Mfg. Co., Providence, R. I.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
Manville, E. J., Machine Co., Waterbury, Conn.
Morgan Construction Co., Worcester, Mass.
Shuster, F. B., Co., New Haven, Conn.
Standard Machinery Co., Providence, R. I.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
Waterbury F. F. & Mch. Co., Waterbury, Conn.
Waterbury Machine Co., Waterbury, Conn.

645 REELS. For supporting the coil of wire as it is being fed into an automatic wire working machine.

Automatic Machine Co., Greenfield, Mass.
Blake & Johnson, Waterbury, Conn.
Cross & Speirs Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn.
Manville, E. J., Machine Co., Waterbury, Conn.
Morgan Construction Co., Worcester, Mass.

REELS, continued

Peck, Stow & Wilcox Co., Southington, Conn.
Shuster, F. B., Co., New Haven, Conn.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*
Waterbury F. F. & Mch. Co., Waterbury, Conn.

646 **ROD FRAMES.** For reducing steel, copper or iron wire.

Morgan Construction Co., Worcester, Mass.
Standard Machinery Co., Providence, R. I.

647 **ROLLING MILLS.** For flattening wire and rods.

Blake & Johnson, Waterbury, Conn.

648 **SPOOLERS.** For winding wire on spools.

Blake & Johnson, Waterbury, Conn.
Hoefer Mfg. Co., Freeport, Ill.
Waterbury Mch. Co., Waterbury, Conn. *See adv. page 51.*

649 **STAPLE MACHINES.** For making the flat wire staples or supports used on kegs, etc.

Bates Machine Co., Joliet, Ill.
Blake & Johnson, Waterbury, Conn.
Hoefer Mfg. Co., Freeport, Ill.
Manville Bros. Co., Waterbury, Conn.
Manville, E. J., Machine Co., Waterbury, Conn.
Perkins Machine Co., Warren, Mass.
Shuster, F. B., Co., New Haven, Conn.

650 **STRAIGHTENERS.** For straightening wire; usually having a continuous feed.

Automatic Machine Co., Greenfield, Mass.
Blake, George F., Mfg. Co., 114 Liberty St., New York.
Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Cross & Speirs Machine Co., Waterbury, Conn.
Franklin Mfg. Co., New Haven, Conn.
Hoefer Mfg. Co., Freeport, Ill.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
Shuster, F. B., Co., New Haven, Conn. *See adv. page 42.*
Waterbury F. F. & Mch. Co., Waterbury, Conn.

651 **STRAIGHTENING AND CUTTING MACHINES, AUTOMATIC.** For straightening wire and at the same time automatically cutting it into desired lengths.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Hoefer Mfg. Co., Freeport, Ill.
Manville, E. J., Machine Co., Waterbury, Conn.
Manville Bros. Co., Waterbury, Conn. *See adv. page 43.*
Shuster, F. B., Co., New Haven, Conn. *See adv. page 42.*

652 **STRAIGHTENING, MEASURING, FORMING AND CUTTING MACHINES, COMBINED.** For straightening, measuring, forming and cutting wire rings in one operation.

Blake & Johnson, Waterbury, Conn.
Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.

STRAIGHTENING MACHINES, continued

Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

653 **SWAGING MACHINES.** For pointing or reducing the ends of wire to permit their entering the dies.

Excelsior Needle Co., Torrington, Conn.
Goodyear, S. W., Waterbury, Conn. *See adv. page 38.*
Morgan Construction Co., Worcester, Mass.
Standard Machinery Co., Providence, R. I.
Waterbury Mch. Co., Waterbury, Conn. *See adv. page 51.*

654 **TACK MACHINES.** For making tacks.

Blake & Johnson, Waterbury, Conn.
Kimball Bros. & Sprague, Brockton, Mass.
Shuster, F. B., Co., New Haven, Conn.
Sweetser, William, Brockton, Mass.

655 **THRASHING BARRELS.** See 87, Tumbling Barrels.

656 **TRUCKS, WIRE MILL.** See Finding List.

657 **TWISTERS.** For twisting plain wire; taking it from the coils and twisting and spooling it automatically.

Bates Machine Co., Joliet, Ill.

658 **WEAVERS WIRE.** For weaving spring beds, etc.

Crompton & Knowles Loom Works, Worcester, Mass.
Erlandsen, J., 172 Centre St., New York.
Glen Mfg. Co., Ellwood City, Pa.

659 **Wire Fence.** For weaving wire fences.

Eureka Fence Mfg. Co., Richmond, Ind.
Gleason, J. M., Hamilton, O.
International Machine Co., Hudson, Mich.
Kitselman Brothers, Muncie, Ind.
Lloyd Mfg. Co., Minneapolis, Minn.

660 **WINDERS.** For winding wire on reels or spools or in coils for the market. See also 648, Spoolers.

Peck, Stow & Wilcox Co., Southington, Conn.
Waterbury F. F. & Mch. Co., Waterbury, Conn.

661 **WIRING MACHINES.** For wiring dies for coffee pots, iron pails, etc.

Bliss, E. W., Co., 17 Adams St., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
West Mfg. Co., Buffalo, N. Y.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.

SECTION X

MISCELLANEOUS

Comprising all Manufacturers not Classified in the Preceding Sections.

MISCELLANEOUS.

1 ADDING MACHINES.

American Addograph Co., Philadelphia, Pa.
American Arithmometer Co., St. Louis, Mo.
Bates Mfg. Co., 83 Chambers St., New York.
Beach, E. R., 60 Westside Ave., Jersey City, N. J.
Calculagraph Co., 13 Maiden Lane, New York.
Commercial Adding Machine Co., Cleveland, O.
Comptograph Co., 146 Blackhawk St., Chicago, Ill.
Felt & Tarrant Mfg. Co., 56 Illinois St., Chicago, Ill.
International Arithmograph Co., 382 Canal St., New York.
Locke, C. E., Mfg. Co., Kensett, Ia.
Mechanical Accountant Co., Providence, R. I.
Standard Adding Machine Co., St. Louis, Mo.
Union Computing Machine Co., 3 Union Sq. W., New York.
Universal Accountant Machine Co., 3807 Laclede Ave., St. Louis, Mo.

2 ADDRESSING MACHINES.

Addressograph Co., 173 S. Canal St., Chicago, Ill.
Automatic Addressing Machine Co., 73 Warren St., New York.
Agnew Auto Mailing Machine Co., 156 Pearl St., Boston, Mass.
Challenge Machinery Co., Grand Haven, Mich.
Dick, Robt., 139 W. Tupper St., Buffalo, N. Y.
Elliott Addressing Machine Co., 100 Purchase St., Boston, Mass.
Golding & Co., 183 Fort Hill Sq., Boston, Mass.
Horton, James A., Greenfield, Mass.
Pollard-Alling Mfg. Co., 35 E. 20th St., New York.
Rapid Addressing Machine Co., 290 Broadway, New York.

3 ASPHALT MACHINERY.

Coldwell-Wilcox Co., Newburgh, N. Y.
Contractors' Tool Co., 118 S. 6th St., Philadelphia, Pa.
Cummer, F. D., & Son, Co., Cleveland, O.
Erie Machine Shops, Erie, Pa.
Hetherington & Berner Co., Indianapolis, Ind.
Iroquois Iron Works, 178 Walden Ave., Buffalo, N. Y.
Pioneer Iron Works, 149 William St., Brooklyn, N. Y.
Scholl, Julian & Co., 126 Liberty St., New York.

4 BAG FILLING MACHINES.

Automatic Weighing Machine Co., Green & Bay Sts., Jersey City, N. J.
Brown Bag Filling Machine Co., Fitchburg, Mass.
Dentler Bagger Co., Vicksburg, Mich.
Dodge, C. S., Lowell, Mass.

5 BAKERS' MACHINERY.

Ovens, Dough Mixers, Brakes, Peeling and Paring Machines, Cutting Machines, Flour Sifters, Dough Dividers, Cracker Grinders, Atomizers, Cake Machines, Fancy Cake Depositors, Egg and Icing Beaters, Dough Troughs, Bread Racks, Kneading Machines, etc.

Allen, J. W., & Co., 208-210 Washington Blvd., Chicago, Ill.
Anderson, J. P., & Co., 422 North 6th St., Philadelphia, Pa.
Anger, Louis J., 77-79 Bowery, New York.
Bailey Oven Co., 587 Bourse Bldg., Philadelphia, Pa.
Baker, Joseph, & Sons, American Oven Co., 61 Union Park Court, Chicago, Ill.
Barbour-Stockwell Co., Cambridgeport, Mass.
Bosemer, Chas., Oven Co., 1710 Potomac Ave., Chicago, Ill.
Carroll, Philip F., Joliet, Ill.
Chambers Machine Co., 2251 Bogen St., Cincinnati, O.
Clauss Patent Bake Oven Co., Cincinnati, O.
Day, J. H., Co., Harrison Ave. and Bogen St., Cincinnati, O.
Duhrkop Oven Co., 1133 Park Row Bldg., New York.
Durand Kneading Machine Co., 168 Chambers St., New York.
Dutchess Tool Co., Fishkill-on-Hudson, New York.
Eppelsheimer & Co., 159 Bleecker St., New York.
Excelsior Kneading Machine Co., 66 Jackson St., Newark, N. J.
Fish, A. J., & Co., 39-41 Franklin St., Chicago, Ill.
Fowler & Rockwell, 9 Elizabeth St., New York.
Fowler Bros., 391 Eleventh St., Brooklyn, N. Y.
Green, Thomas L., & Co., 1510-1516 N. Washington St., Indianapolis, Ind.
Hall, S. L., Co., 156 East 18th St., Chicago, Ill.
Harton, Pembroke D., 15th St. & Fairmount Ave., Philadelphia, Pa.
Hicks & Schmidt, 587-589 Greenwich St., New York.
Hilcher, E. P., 192 Larrabee St., Chicago, Ill.
Hubbard Portable Oven Co., 162-174 Belden Ave., Chicago, Ill.
Hueg, H., & Co., Thomson Ave., Long Island City, N. Y.
Independent Cracker Machine Co., 141-147 Fulton St., Chicago, Ill.
Katzinger, Edw., 161 W. Washington St., Chicago, Ill.
Lalance & Grosjean Mfg Co., 19 Cliff St., New York.
McCullough, William L., Co., Ypsilanti, Mich.
McDowell Oven Co., 156 State St., Boston, Mass.
MacHale, R. L., 131 Mangin St., New York.
Megson, R., & Co., 46 State St., Cambridge, Mass.
Middleby Oven Co., 357-359 Greenwich St., New York.
Mills, Thomas, & Bro., 1301 North 8th St., Philadelphia, Pa.
Peterson, Edward, Chicago, Ill.
Scientific Bread Machine Co., 52d & Media Sts., Philadelphia.
Reid Portable Oven Co., 617 Main St., Buffalo, N. Y.
Roberts Portable Oven Co., 177 Illinois St., Chicago, Ill.
Ruger, J. W., Mfg. Co., Buffalo, N. Y.
Salzman Mfg. Co., Hamilton, O.
Schaller, Albert, 47 Gold St., Rochester, N. Y.
Thomson, C. A., Machine Co., Belleville, N. J.
Triner Scale & Mfg. Co., 128 So. Clinton St., Chicago, Ill.
Varney Heating & Mfg. Co., Leavenworth, Kans.
Vindex Mfg. Co., Aurora, Ill.
Werner & Pfleiderer, Saginaw, Mich.
Westerman Baking Machine Co., 68-70 Jefferson St., Chicago.
Zoeller, William, 11-16 S. Canal St., Chicago, Ill.

6 BASKET MACHINERY.

Cobden Machine Works, Cobden, Ill.
Mergenthaler-Horton Basket Machine Co., 253 Broadway, New York.
Merritt Mfg. Co., Lockport, N. Y.
Titus, E. E., Petersburg, Va.

7 BELLOWS.

Including Blacksmiths', Foundry, Molders', etc., Bellows; also Hand and Foot Bellows.

Bickerton, T. B., 23 N. 6th St., Philadelphia, Pa.
Buffalo Dental Mfg. Co., Buffalo, N. Y.
Bullock, T. H., Co., Cleveland, O.
California Bellows Mfg. Co., 79 Federal St., San Francisco.
Christen, F., & Sons, Main and Dock Sts., St. Louis, Mo.
Churchyard, Joseph J., 648 Clinton St., Buffalo, N. Y.
Cleveland Facing Mill Co., Cleveland, O.
Keys, Chas. H., 128 Broadway, New York.
Osborn Mfg. Co., Cleveland, O.
Paxson, J. W., Co., N. Delaware Ave., Philadelphia, Pa.
Scott, Geo. M., 440 Jefferson St., Chicago, Ill.
Smith, J. D., Foundry Supply Co., Cleveland, O.
Woodason, Thomas, 2920 D St., Philadelphia, Pa.

8 BLOWERS.

Including Exhaust Fans; also Forge, Laundry, Mining, Positive, Rotary, etc., Blowers.

American Blower Co., Detroit, Mich.
American Gas Furnace Co., 23 John St., New York. *See adv. page 64.*
Bayley, Wm., & Sons, Co., Milwaukee, Wis.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Flexible Shaft Co., 124 La Salle Ave., Chicago, Ill.
Cleveland Steam Gauge Co., Cleveland, O.
Comstock, Geo. S., Mechanicsburg, Pa.
Connersville Blower Co., Connersville, Ind.
Cornell, J. B. & J. M., 26th St. and 11th Ave., New York.
Crowell, Gilmer, 294 Graham St., Brooklyn, N. Y.
Exeter Machine Works, Exeter, N. H.
Empire Forge Co., Troy, N. Y.
Eynon-Evans Mfg. Co., 1519 Clearfield St., Philadelphia, Pa.
Foos Mfg. Co., Springfield, O.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.
General Electric Co., Schnectady, N. Y.
Giblin & Co., 105 Broad St., Utica, N. Y.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hannan & Finton, Springfield, Mass.
Hartford Blower Co., Hartford, Conn.
Howard & Morse, 45 Fulton St., New York.
McClave-Brooks Co., Scranton, Pa.
Massachusetts Fan Co., Waltham, Mass.
Mathis Bros. Co., 25th Place and Stewart Ave., Chicago, Ill.

BLOWERS, continued

National Blower Works, 178 St. Paul Ave., Milwaukee, Wis.
Nordyke & Marmon Co., Indianapolis, Ind.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Porbeck Bros. Mfg. Co., 2017 N. Broadway, St. Louis, Mo.
Potts, H. D., Lancaster, Pa.
Roots, P. H. & F. M., Connersville, Ind.
Schutte, L., & Co., 12th and Thompson Sts., Philadelphia, Pa.
Slocum, Geo. S., 32 Prospect Hill, Newport, R. I.
Smalley Mfg. Co., Manitowoc, Wis.
Sprague Electric Co., 527 West 34th St., New York.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn. *See adv. page 82.*
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Timmis & Clissold, Bound Brook, N. J.
Vulcan Iron Works, Wilkesbarre, Pa.
Weimer Machine Works Co., Lebanon, Pa.
Wilbraham-Green Blower Co., 2518 Frankford Ave., Philda.
Wing, L. J., Mfg. Co., 251 W. Broadway, New York.

9 BOTTLERS' MACHINERY.

Bottle Corking and Wiring Machines, Bottle Washers, Rinsing Machines, Bottle Filling Machines, Steaming and Soaking Tanks, Cork Branding Machines, Cork Extractors, Beer Pasteurizing Apparatus, etc.

Aetna Stopper Co., Providence, R. I.
American Soda Fountain Co., 282 Congress St., Boston, Mass.
Bailey Engine Co., Lima, N. Y.
Baird Machine Co., Oakville, Conn.
Bernardin Bottle Cap Co., Evansville, Ind.
Bishop & Babcock Co., Kirtland, Hamilton & Dart Sts., Cleveland, O.
Bliss, E. W. Co., Adams & Plymouth Sts., Brooklyn, N. Y.
Boston Bottle Wiring & Labeling Co., 77-79 Franklin St., Boston, Mass.
Bottlers' Machinery Co., 89 Beach St., Boston, Mass.
Bottlers' Special Mchy. Co., 110 Indiana St., Chicago, Ill.
Brewers' and Bottlers' Machinery Works, 109 S. Jefferson St., Chicago, Ill.
Brown-Winstanley Mfg. Co., Los Angeles, Cal.
Century Stopper Co., 212 Canal St., New York.
Crown Cork & Seal Co., Baltimore, Md.
Cunningham Mfg. Co., 113 So. 7th St., Philadelphia, Pa.
Economic Machinery Co., Worcester, Mass.
Elizabeth Mfg. Co., 1028 Elizabeth Ave., Elizabeth, N. J.
Ermold, Edward, 652 Hudson St., New York.
Gallagher Mfg. Co., 107 State St., Lynn, Mass.
Gem Stopper Co., 2122 Nicholas St., Philadelphia, Pa.
Goldman, E., & Co., Inc., 175 E. Randolph St., Chicago, Ill.
Henes & Keller, Menominee, Mich.
Hoyt Bros., & Co., 496 Washington St., Lynn, Mass.
Hutchinson, W. H., & Son, 196 S. Desplaines St., Chicago, Ill.
Hutter, Karl, 34 Reade St., New York.
Hygienic Bottling Machine Co., 96 Broadway, New York.
Independent Machinery Co., 175 E. Randolph St., Chicago, Ill.
Kayser, Joseph Co., 1333 Boston Ave., Philadelphia, Pa.

BOTTLERS' MACHINERY, continued

Klemm & Co., 369 Grand Ave., Chicago, Ill.
Koscherak, I., Canal & Centre Sts., New York.
Lightning Bottle Wirer Co., Produce Exchange Bldg., New York.
Liquid Carbonic Acid Mfg. Co., Wells & Michigan Sts., Chicago.
Loew Supply & Mfg. Co., Cleveland, Ohio.
Magnus, A., Sons Co., 244 E. Randolph St., Chicago, Ill.
Model Bottling Machinery Co., St. Louis, Mo.
New York Bottlers' Supplies Mfg. Co., 35 Barclay St., New York.
Norton, Gerrit, 378 West Broadway, New York.
Owens Bottle Machine Co., Toledo, O.
Perfection Bottling Machine Co., 141-143 S. Clinton St., Chicago, Ill.
Puffer Mfg. Co., 44-48 Portland St., Boston, Mass.
Reisinger, Hugo, 11 Broadway, New York.
Rich, A. E. Fall River, Mass.
Rosenfeld, M. C., Co., 14-16 Portland St., Boston, Mass.
Ruff, Wm. J., Quincy, Ill.
Shield's Automatic Bottling Table Co., Homestead, Pa.
Schrieber, L., & Sons, Cincinnati, O.
Slocum, Geo. S., 32 Prospect Hill St., Newport, R. I.
Smith-Medbury Mfg. Co., Vliet & 32d Sts., Milwaukee, Wis.
Standard Stopper Co., 23d St., between 9th and 10th Aves., New York.
Twitchell, S., Co., 223-225 Vine St., Philadelphia, Pa.
Vilter Mfg. Co., 810-820 Clinton St., Milwaukee, Wis.
Volkenning, C., 329 42d St., Brooklyn, N. Y.
Walter, Charles, & Son, Stapleton, S. I., N. Y.
Wamsganz Bros. 253 Devoe St., Brooklyn, N. Y.
Wenzell, S. S. Machine Co., 439-443 N. 12th St., Philadelphia, Pa.
Weston-Mott Co., Utica, N. Y.
Witteman Bros., 188 William St., New York.
Yawman & Erbe Mfg. Co., Rochester, N. Y.
Zwietusch, Otto, Co., 705-715 Chestnut St., Milwaukee, Wis.

10 CARBONATING APPARATUS.

American Soda Fountain Co., 282 Congress St., Boston, Mass.
Bennett & Gompper Co., 245 Centre St., New York.
Bishop & Babcock Co., Kirtland, Hamilton and Dart Sts., Cleveland, O.
Cleveland Faucet Co., 15 Frankfort St., Cleveland, O.
Ferry Mfg. Co., 153-155 Centre St., New York.
Goodwin, M. A., & Co., 35 Barclay St., New York.
Liquid Carbonic Co., Michigan & Wells Sts., Chicago, Ill.
Puffer Mfg. Co., 44-48 Portland St., Boston, Mass.
Schneible, Joseph Co., 128-132 Mott St. New York.
Twitchell, S., Co., 223-225 Vine St., Philadelphia, Pa.
Weston-Mott Co., Utica, N. Y.
Zwietusch, Otto Co., 705-715 Chestnut St., Milwaukee, Wis.

11 BOXING AND WRAPPING MACHINES.

American Wrapping & Box Machine Co., 40 Wall St., New York.
Atlantic Machine Works, Westminster, Md.
Burt Machine Co., Baltimore, Md.

BOXING AND WRAPPING MACHINES, continued

Inman-American Mfg. Co., Amsterdam, N. Y.
Knapp, Fred H., Co., 80 Wabash Ave., Chicago, Ill.
United Wrapping Machine Co., 108 Dearborn St., Chicago, Ill.
Universal Machine Development Co., 29 Broadway, New York.

12 BREWERY AND MALT HOUSE MACHINERY.

Coolers, Beer Filters, Racking Apparatus, Mash Machines, Steam Boiling Apparatus, Revolving Sparges, Tanks, Fermenting Tubs, Stock Vats, Pitching Machines, etc.

Adt, John B., Machine Works, 332-342 N. Holliday St., Baltimore, Md.
Brewers & Bottlers' Machinery Works, 109 S. Jefferson St., Chicago, Ill.
Burkhardt's Geo., J., Sons, 435 Drexel Bldg., Philadelphia, Pa.
Davenport Foundry & Machine Co., Davenport, Ia.
Deckebach, F. S., Sons Co., Cincinnati, O.
Eureka Machine Co., Vega & Mills Sts., Cleveland, O.
Fritsch, Francis Mfg. Co., McMicken Ave., Cincinnati, Ohio.
German-American Filter Co., 69 Broad St., New York.
Goetz & Flodin Mfg. Co., 109-133 W. Chicago Ave., Chicago, Ill.
Goldman, E., & Co., Inc., 175 E. Randolph St., Chicago, Ill.
Haggenmiller, Otto, 827 N. 4th St., Philadelphia, Pa.
Hersey Mfg. Co., South Boston, Mass.
Heyman, N. H., 438 E. 59th St., New York.
Hooper Drying Machine Co., Produce Exchange A. 16, New York.
Huntley Mfg. Co., Silver Creek, N. Y.
Independent Filter Co., 171 Randolph St., Chicago, Ill.
Kaestner & Co., 245 So. Jefferson St., Chicago, Ill.
Krueger Drying Co., Newark, N. J.
Loew Supply & Mfg. Co., Cleveland, Ohio.
National Machine Works, Sheffield & North Aves, Chicago, Ill.
Northwestern Copper & Brass Works, St. Paul, Minn.
Olsen & Tilgner, 37-39 Ontario St., Chicago, Ill.
Orth, Fred, 181 Prince St., New York.
Pawling & Harnischfeger, Milwaukee, Wis.
Rach, Carl, 435 West 123d St., New York.
Rauch, Henry, 147 Center St., New York.
Roos, August, Sons Copper Works, 232 W. 27th St., New York.
Schneible, Joseph Co., 128-132 Mott St., New York.
Schock, Gustav, 341-343 East 59th St., New York.
Selg, Otto, 405 Evergreen Ave., Brooklyn, N. Y.
Smith-Medbury Mfg. Co., Vliet & 32d Sts., Milwaukee, Wis.
Stier Herman Mfg. Co., 552-560 No. Halsted St., Chicago, Ill.
Torchiani, H., 195 Water St., New York.
Vilter Mfg. Co., Milwaukee, Wis.
Witteman Bros., 188 William St., New York.
Zies, Charles, 316-318 Fremont Ave., Baltimore, Md.
Zwietusch, Otto, Co., 705-715 Chestnut St., Milwaukee, Wis.

13 **ACCESSORIES. Fermenting Tubs, Vats, Storage Tanks, etc.**

Baltimore Cooperage Co., Creek St., Baltimore, Md.
Burkhardt's Geo. J., Sons, 435 Drexel Bldg., Philadelphia, Pa.

ACCESSORIES, BREWERY MACHINERY, continued

Excelsior Redwood Co., San Francisco, Cal.
Hauser, Brenner & Fath Co., Cincinnati, Ohio.
Kast, Copper, & Sheet Iron Co., Buffalo, N. Y.
Ketter, Fred, Cooperage Works, 535-537 30th St., Milwaukee, Wis.
National Cooperage Co., Wyckoff Ave., Evergreen, N. J.
Pfaudler Co., Rochester, N. Y.
Woolford, George, Cor. Broad and Chestnut Sts., Philadelphia, Pa.

14 BRICK MACHINERY.

Pug Mills, Dump Tables, Wet and Dry Pans, Chaser Mills, Crushers, Stone Separators, Granulators, Brick Sizing Machines, Buffing Machines, Sand Grinders, Mold Washers, Molds, Auger Machines, Cutters, Re-Presses, etc.

Adrian Brick & Tile Machine Co., Adrian, Mich.
American Clay Working Machinery Co., Bucyrus, O.
Anderson Foundry & Machine Co., Anderson, Ind.
Arnold-Creagor Co., Cincinnati, O.
Bonnot Co., Canton, O.
Brewer, H., & Co., Tecumseh, Mich.
Carnell, Geo., 1819 N. 5th St., Philadelphia, Pa.
Chambers Bros. Co., 52d St. & Lancaster Ave., Philadelphia.
Chicago Brick Machinery Co., 225 Dearborn St., Chicago, Ill.
Chisholm, Boyd & White Co., 57th & Wallace Sts., Chicago, Ill.
Craycroft, Benjamin, Vandalia, Ill.
Eagle Iron Works, Des Moines, Ia.
Eastern Machinery Co., New Haven, Conn.
Fate, J. D., & Co., Plymouth, O.
Freese, E. M., & Co., Galion, O.
Horton Mfg. Co., Painesville, O.
Kells Foundry & Machine Co., Hudson, Mich.
Leader Mfg. Co., Decatur, Ill.
Madden & Co., Rushville, Ind.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Means Fdry. & Mch Co., Steubenville, O.
Michigan Brick & Tile Machine Co., Morenci, Mich.
Mock, James & Co., Hartford City, Ind.
Ohio Ceramic Engineering Co., Cleveland, O.
Potts, C. & A., Co., Indianapolis, Ind.
Ramming, John, Machine Co., St. Louis, Mo.
Raymond, C. W., & Co., Dayton, O.
Steele, J. C., & Sons, Statesville, N. C.
Stevenson Co., Wellsville, O.
Turner, Vaughan & Taylor Co., Cuyahoga Falls, O.
United States Brick Press Co., Erie, Pa.
Wallace Mfg. Co., Frankfort, Ind.
Wellington Machine Co., Wellington, O.
Wiles, A. M., & W. H., Grassy Point, N. Y.

15 **DRY PRESS. Clay Steamers, Brick Machines, Molds, Reduction Mills, Presses, Re-Presses, etc.**

American Clay Working Machinery Co., Bucyrus, O.
Anderson Foundry & Machine Works, Anderson, Ind.
Battenfeld Mfg. Co., Cleveland, O.
Chisholm, Boyd & White Co., 57th & Wallace Sts., Chicago, Ill.

DRY PRESS BRICK MACHINERY, continued

Clearfield Machine Shops, Ltd., Clearfield, Pa.
Fernholtz Brick Machinery Co., St. Louis, Mo.
Frost Mfg. Co., Galesburg, Ill.
Globe Iron Foundry Co., Erie, Pa.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Raymond, C. W., & Co., Dayton, O.
Ross-Keller Brick Machine Co., St. Louis, Mo.
Scott Mfg. Co., Keokuk, Ia.

16 **SAND LIME. Lime Slackers and Pulverizers, Presses, Mixers, Steamers, Sand Sifters, Molds, etc.**

American Sand-Lime Brick Co., 225 Dearborn St., Chicago, Ill.
Cement Brick Co., Port Huron, Mich.
Chisholm, Boyd & White Co., 57th & Wallace Sts., Chicago.
Coltrin, R. B., Mfg. Co., Jackson, Mich.
Elwood Iron Works, Elwood, Ind.
Schwarz System Brick Co., 8 Bridge St., New York.

17 BRIQUETTE MACHINERY.

Chisholm, Boyd & White Co., 57th & Wallace Sts., Chicago, Ill.
Mould, Henry S., Co., Pittsburg, Pa.
Riehle Bros. Testing Machine Co., 1424 N. 9th St., Philda, Pa.
Tyrone Foundry & Machine Co., Tyrone, Pa.

18 BROOM MACHINERY.

Cleaning, Scraping, Sizing, Sewing and Winding Machines, Hurl Cutters, Broom Vises, Trimmers, etc.

Boyer, A., Broom Co., Galesburg, Ill.
Cassard, Herbert, 332 No. Holliday St., Baltimore, Md.
Colton, G. D., & Co., Galesburg, Ill.
Genesee Valley Mfg. Co., Mt. Morris, N. Y.
Hand Stitch Broom Sewing Machine Co., 246 3d Ave., Pittsburg, Pa.
Lipe & Walrath, Fort Plain, N. Y.
Oatman & Toll, 55 N. Moore St., New York.
Wold, Torris & Co., 66 N. Jefferson St., Chicago, Ill.

19 BRUSH MACHINERY.

Drawing, Boring and Trimming Machines, etc.

Puritan Mfg. Co., 72 Lincoln St., Boston, Mass.
United Brush Supply Co., 238 Arch St., Philadelphia, Pa.

20 BUTCHERS' AND PACKING HOUSE MACHINERY.

Coolers, Choppers, Beef Shavers, Sausage Stuffers, Masticators, Steak Tenderers, Sausage Mixers, Ham Stuffers, Ham Branding Machines, Lard Driers, Mixers, Coolers, etc.

Allbright-Nell Co., 4013 Wentworth Ave., Chicago, Ill.
Billingham, P., & Co., Trenton, N. J.
Chalfant Hardware Mfg. Co., Atglen, Pa.
Chambers Machine Co., Cincinnati, Ohio.

BUTCHERS' MACHINERY, continued

Cincinnati Butcher Supply Co., Cincinnati, Ohio.
Decatur Refrigerator & Mfg. Co., Decatur, Ill.
Dopp, H. W., Co., Buffalo, N. Y.
Enterprise Mfg. Co., 3d and Dauphin Sts., Philadelphia, Pa.
Forschner, Charles, & Sons, 206 East 19th St., New York.
Gloekler, Bernard, 1127-1133 Penn Ave., Pittsburg, Pa.
Hellriegel Co., Buffalo, N. Y.
Moyer, J. W., & Co., Philadelphia, Pa.
National Specialty Mfg. Co., Lehigh Ave. & 3d St., Philda, Pa.
Nittinger, August, 826 No. 4th St., Philadelphia, Pa.
Perrin, William R., & Co., 46th & Loomis Sts., Chicago, Ill.
Randall, R. T., & Co., 331 No. 2d St., Philadelphia, Pa.
Smith's, John E., Sons Co., Buffalo, N. Y.
Silver Mfg. Co., Salem, Ohio.
Stratton Mfg. Co., Erie, Pa.
Thomas-Albright Co., Goshen, Ind.
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.
Zies, Charles, 316 & 318 S. Fremont Ave., Baltimore, Md.

21 BUTTON MACHINERY.

Button Presses, Button Covering Machines, Punches, etc.

Button Machinery Co., 170 Broadway, New York.
Defiance Button Machine Co., 266 Greene St., New York.
East Davenport Machine & Novelty Works, Davenport, Ia.
Holub & Dusha, 1801 First Ave., New York.
Lange & Fischer Mfg. Co., 67 Friendship St., Providence, R. I.
Lenox Mfg. Co., Catasauqua, Pa.
National Water Tube Boiler Co., New Brunswick, N. J.
Wiebke, Charles, 211-213 Centre St., New York.

22 CANDLE MOLDING MACHINES.

Brewer, William W., Troy, N. Y.
Brown & Patterson, Marcy Ave, and Hope St., Brooklyn, N. Y.
Garrigues, W. E., 15 Cortlandt St., New York.
Homan & Co., Cincinnati, O.
Houchin & Huber, 39 53d St., Brooklyn, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Watson-Stillman Co., 46 Dey St., New York.

23 CANNING HOUSE MACHINERY.

Scalding, Peeling, Capping, Cooking, Cutting and Filling Machines.

Ayars Machine Co., Salem, N. J.
Burpee & Letson, Ltd., Bellingham, Wash.
Burt Machine Co., 325-327 N. Holliday St., Baltimore, Md.
Conant, R. O. Co., 229 Commercial St., Portland, Me.
Cottingham, H., 15 Post Office Ave., Baltimore, Md.
Cox Bros., Bridgeton, N. J.
Fancher Machine Co., Baldwinsville N. Y.
French, Daniel T., & Co., 42 River St., Chicago, Ill.
Goodell Co., Antrim, N. H.
Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.
Howard's, M. E., Machine Works, Indianapolis Ind.
Howes, S., Co., Silver Creek, N. Y.
Huntley Mfg. Co., Silver Creek, N. Y.

CANNING HOUSE MACHINERY, continued

Knapp, Fred H., 80 Wabash Ave., Chicago, Ill.
Lang, E. M., & Co., 71 Kennebec St., Portland, Me.
Lewis, E. J., Middleport, N. Y.
McCagg, J. V., Co., 42 Rivers St., Chicago, Ill.
McDonald Mche. Co., 3749-51 Wentworth Ave., Chicago, Ill.
Mitchell, John R., Washington St., Baltimore, Md.
Morral Bros., Morral, Ohio.
Remington Machine Co., Wilmington, Del.
Ross, Charles, & Son, 16-20 Steuben St., Brooklyn, N. Y.
Sinclair-Scott Co., Wells & Patapsco Sts., Baltimore, Md.
Slaysman & Co., 125-127 E. Falls Ave., Baltimore, Md.
Sprague Canning Mchy Co., 42 River St., Chicago Ill.
Stevenson & Co., 229 N. Holliday St., Baltimore, Md.
Wold, Torris & Co., 66-70 N. Jefferson St., Chicago, Ill.
Wilmore, J. T., Denver, Colo.

24 CAROUSELS, RIDING GALLERIES, ETC.

Armitage-Herschell Co., No. Tonawanda, N. Y.
Crawley Scenic Pleasure Railway Co., Cincinnati, O.
Dentzel, G. A., 3635 Germantown Ave., Philadelphia, Pa.
Gillie Engine & Machine Co., Tonawanda, N. Y.
Hart, Ira E., Camden, N. J.
Herschell, Spillman & Co., North Tonawanda, N. Y.
Hutchins Roller Swing Co., Alton, Ill.
Ingersoll Construction Co., Pittsburg, Pa.
Loof, Charles, Norman Ave. and Russell St., Brooklyn, N. Y.
Miniature Railroad Co., 407 Broadway, New York.
Morris Amusement Co., 902 Walnut St., Philadelphia, Pa.
Parker, Charles W., Abilene, Kan.

25 CARPET CLEANING MACHINES.

Cleveland Laundry Mchy. Co., Cleveland, O.
Gerry, George, & Son, Athol, Mass.

26 CARPET STRETCHERS.

Chalfant Mfg. Co., Lancaster, Pa.
Holliday Mfg. & Eng. Co., 200 S. Clinton St., Chicago, Ill.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
Knapp, George S., Bridgeport, Conn.
Kraeuter & Co., Newark, N. J.
Montross, R. W., Galien, Mich.
Osborne, C. S., & Co., Newark, N. J.
Smith, Seymour & Son, Oakville, Conn.
Tower & Lyon, 95 Chambers St., New York.

27 CARRIERS, CASH AND PACKAGE.

Air Line Carrier Co., 200 Monroe St., Chicago, Ill.
Barbee Wire & Iron Works, 44 Dearborn St., Chicago, Ill.
Barr Cash & Package Carrier Co., Mansfield, O.
Lamson Consolidated Store Service Co., Lowell, Mass.
National Pneumatic Service Co., 301 W. Lake St., Chicago, Ill.
Taisey Pneumatic Service Co., Indianapolis, Ind.
Westcott-Jewell Co., Seneca Falls, N. Y.

28 CASH REGISTERS.

Chicago Cash Register Co., 1250 76th St., Chicago, Ill.
Hough Cash Recorder Co., Indian Orchard, Mass.
International Mfg. Co., Columbus, O.
National Cash Register Co., Dayton, O.
Standard Cash Register Co., Wabash, Ind.

29 CELLULOID MACHINERY.

Burroughs, Charles, Co., 141 Commerce St., Newark, N. J.

30 CEMENT MACHINERY.

Abbe Engineering Co., 220 Broadway, New York.
Bonnot Co., Canton, O.
Ehrsam, J. B., & Sons Mfg. Co., Enterprise, Kan.
Iroquois Iron Works, 179 Walden Ave., Buffalo, N. Y.
Nazareth Foundry & Machine Co., Nazareth, Pa.
Quincy Engine Works, Quincy, Ill.
United Iron Works Co., Springfield, Mo.
Vulcan Iron Works, Wilkesbarre, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.

31 CHECK PERFORATORS.

Abbot Machine Co., 30 W. Randolph St., Chicago, Ill.
Cummins, B. F., Co., 42 W. Jackson Blvd., Chicago, Ill.
Wesley Mfg. Co., 31 Beekman St., New York.

32 CLAY WORKING MACHINERY.

Mixers, Pulverizers, Wet Pans, Dry Pans, Tempering Machines, etc.

Adrian Brick & Tile Machine Co., Adrian, Mich.
Adamson, A., Akron, O.
American Clay Working Machinery Co., Bucyrus, O.
Anderson Foundry & Machine Works, Anderson, Ind.
Arnold-Creagor Co., Cincinnati, O.
Battenfeld Mfg. Co., Cleveland, O.
Bonnot Co., Canton, O.
Brewer, H., & Co., Tecumseh, Mich.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Carnell, Geo., 1819 North 5th St., Philadelphia, Pa.
Chambers Bros. Co., 52d St. & Lancaster Ave., Philadelphia.
Chisholm, Boyd & White Co., 57th & Wallace Sts., Chicago, Ill.
Drake Standard Machine Works, Jackson Blvd., Chicago, Ill.
Craycroft, Benjamin, Vandalia, Ill.
Eagle Iron Works, Des Moines, Ia.
Eastern Machinery Co., New Haven, Conn.
Fate, J. D., & Co., Plymouth, O.
Fernholtz Brick Machinery Co., St. Louis, Mo.
Fisher Engine, Foundry & Machine Co., Pittsburg, Pa.
Freese, E. M., & Co., Galion, O.
Frost Mfg. Co., Galesburg, Ill.
Globe Iron Foundry Co., Erie, Pa.
Horton Mfg. Co., Painesville, O.
Kills Foundry & Machine Co., Hudson, Mich.
Leader Mfg. Co., Decatur, Ill.

CLAY WORKING MACHINERY, continued

Lewis Foundry & Machine Co., Pittsburg, Pa.
Madden & Co., Rushville, Ind.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Means Foundry & Machine Co., Steubenville, O.
Michigan Brick & Tile Machine Co., Morenci, Mich.
Mock, James, & Co., Hartford City, Ind.
Ohio Ceramic Engineering Co., Cleveland, O.
Phillips & McLaren, Pittsburg, Pa.
Potts, C. & A., Co., Indianapolis, Ind.
Raymond, C. W., & Co., Dayton, O.
Rockwood Mfg. Co., Indianapolis, Ind.
Ross-Keller Brick Machine Co., St. Louis, Mo.
Scott Mfg. Co., Keokuk, Ia.
Stedman Foundry & Machine Works, Aurora, Ind.
Steele, J. C., & Sons, Statesville, N. C.
Stevenson Co., Wellsville, O.
Taplin, Rice & Co., Akron, O.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
United States Brick Press Co., Erie, Pa.
Vulcan Iron Works, Wilkesbarre, Pa.
Wallace Mfg. Co., Frankfort, Ind.
Wellington Machine Co., Wellington, O.
Wiles, A. M. & W. H., Grassy Point, N. Y.
Williams, M. F., Mfg. Co., St. Louis, Mo.
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

33 ACCESSORIES. Molders' Tools, Gatherers, Pallets, Molds, etc.

Burr's Damascus Tool Works, Detroit, Mich.
Central Iron Works, Quincy, Ill.
Davis-Price Foundry & Machine Co., New Cumberland, W. Va.
Gray, S. B., & Co., Indianapolis, Ind.
Mershon, Schuette, Parker & Co., Saginaw, Mich.
Richardson, Willard D., Ruggery Bldg., Columbus, O.

34 CLIPPING MACHINES.

American Shearer Co., Nashua, N. H.
Brown & Sharpe Mfg. Co., Providence, R. I.
Chicago Flexible Shaft Co., 124 La Salle Ave., Chicago, Ill.
Coates Clipper Mfg. Co., Worcester, Mass.
Graham, John H., & Co., 95 Reade St., New York.
Hotchkiss, Edward S., Bridgeport, Conn.
Peters Harness & Saddlery Co., Newark, N. J.
Phillips, M. T., Pomeroy, Pa.
Wiebusch & Hilger, Ltd., 9 Murray St., New York.

35 COFFEE MACHINERY.

Hullers, Pulpers, Separators, Washers, Polishers, Graders, etc.

Abele, Chris., 537 West 50th St., New York.
Blymyer Iron Works Co., Cincinnati, O.
Burpee, F. B. C., Philadelphia, Pa.
Campbell, P. F., 55-57 Laurel St., Philadelphia, Pa.
Chicago Coffee Mills, 23 Michigan Ave., Chicago, Ill.
Engelberg Huller Co., Syracuse, N. Y.
Fraser Mfg. Co., 26 Cortlandt St., New York.
Howes, S., Co., Silver Creek, N. Y.

COFFEE MACHINERY, continued

Huntley Mfg. Co., Silver Creek, N. Y.
Mason, Marcus, & Co., Produce Exchange Bldg., New York.
Salem Iron Works, Winston-Salem, N. C.
Salzman Mfg. Co., Hamilton, O.
Squier, Geo. L., Mfg. Co., Buffalo, N. Y.
Warner Mfg. Co., 39 Cortlandt St., New York.

36 CONCRETE MACHINERY.

Mixers, Measuring Boxes, Hoppers, etc.

Carlin's, Thomas, Sons Co., Allegheny, Pa.
Clyde Iron Works, Duluth, Minn.
Cockburn Barrow & Machine Co., Jersey City, N. J.
Contractors' Plant Co., 37 Pittsburg St., Boston, Mass.
Contractors' Supply & Equipment Co., 232 5th Ave., Chicago.
Drake Standard Machine Wks., 7-9 Garden St., Chicago, Ill.
Gilbreth, Frank B., 176 Federal St., Boston, Mass.
Kaltenbach & Griess, Williamson Bldg., Cleveland, Ohio.
McKelvey Concrete Machinery Co., N. Y. Life Bldg., Chicago.
Municipal Engineering & Contracting Co., Manhattan Bldg., Chicago, Ill.
Pioneer Iron Works, 149 William St., Brooklyn, N. Y.
Ransom Concrete Machinery Co., 11 Broadway, New York.
Scholl, Julian, & Co., 126 Liberty St., New York.

37 CONCRETE WALL MACHINES.

American Construction Machine Co., Petoskey, Mich.
Palmer, Harmon S., 1450 Binney St., Washington, D. C.

38 CONFECTIONERS' MACHINERY.

Cream Coolers, Candy Coolers, Buttercup Cutters, Waffle Cutters, Milk and Egg Shakers, Candy Molds, Ice Shavers, Chocolate Coating Machines, Marshmallow Depositors, etc.

Allen, J. W., & Co., 208 Washington Blvd., Chicago, Ill.
American Chocolate Machinery Co., 49 W. 66th St., New York.
Anderson, J. P., & Co., 422 N. 6th St., Philadelphia, Pa.
Barbour-Stockwell Co., Cambridgeport, Mass.
Burkhard, Thomas, 494-496 Flushing Ave., Brooklyn, N. Y.
Calleson Motor Co., 270 West St., New York.
Campbell, P. F., 55-57 Laurel St., Philadelphia, Pa.
Carey, Samuel, 17 State St., New York.
Champion Candy Machine Co., 3255 N. 12th St., Philadelphia, Pa.
Chapman & Smith Co., Chicago, Ill.
Chicago Chocolate Cream Co., 70-74 W. Monroe St., Chicago, Ill.
Chocolate Cooler Co., Grand Rapids, Mich.
Clad, V., & Sons, 12th St., near Locust, Philadelphia, Pa.
Coleman Co., 257 Greenwich St., New York.
Collum Mfg. Co., Hartford, Conn.
Confectioners' Machinery & Mfg. Co., Springfield, Mass.
Confectioners' & Bakers' Supply Co., 218-220 E. Washington St., Chicago, Ill.
Davenport Ice Chipping Machine Co., Davenport, Ia.

CONFECTIONERS' MACHINERY, continued

De Beauvais, J., 155th St. and Elton Ave., New York.
Dopp, H. W., Co., Buffalo, N. Y.
Eppelsheimer & Co., 159 Bleecker St., New York.
Erie Specialty Co., Erie, Pa.
Faust Machine Works, 113-115 Eighth St., Brooklyn, N. Y.
Fowler & Rockwell, 9 Elizabeth St., New York.
Hartig Standard Gas Engine Co., Newark, N. J.
Hildreth, H. L., 38-48 Batterymarch St., Boston, Mass.
Holmberg, Charles, & Co., 50 Michigan St., Chicago, Ill.
Horizontal Freezer Co., 53-55 Lake St., Chicago, Ill.
Howard Fdry. & Machine Co., Landsdowne, Pa.
Hueg, H., & Co., Thomson Ave., Long Island City, N. Y.
Independent Cracker Machine Co., 141 Fulton St., Chicago, Ill.
Kane, Thomas, & Co., Inc., Racine, Wis.
Katzenger, Edward, & Co., 159-163 W. Washington St., Chicago.
Megson, R., & Co., 46 State St., Cambridge, Mass.
Mills, Thomas, & Bro., 1301 N. 8th St., Philadelphia, Pa.
New Century Mfg. Co., Dayton, Ohio.
New York Candy Mold Co., 911 Park Row Bldg., New York.
Pryibil, P., 512 W. 41st St., New York.
Reinhold Mfg. Co., 133-139 Beaubien St., Detroit, Mich.
Ruger, J. W., Mfg. Co., Chicago and Perry Sts., Buffalo, N. Y.
Salzman Mfg. Co., Hamilton, O.
Savage Bros. Co., 42 Michigan St., Chicago, Ill.
Simpson, J. S. & G. F., 633 Kent Ave., Brooklyn, N. Y.
Standard Candy Machine Co., Columbus, Ohio.
Universal Machine Development Co., 29 Broadway, New York.
Wallace, John W., Co., 396 South 2d St., Brooklyn, N. Y.
Walton, P. M., 1023 Germantown Ave., Philadelphia, Pa.

39 CORSET MACHINERY.

Corset Cutting Blocks, Corset Steel Tipping Machines, etc.

Adams, A. L., Bridgeport, Conn.
Elm City Lumber Co., New Haven, Conn.
Stimpson, Edwin B., & Son, 31 Spruce St., New York.

40 COTTON GINNING MACHINERY.

Cotton Gins, Hullers, Gin Feeders, Condensers, Cotton Elevators and Cleaners.

Adams, W. T., Machine Co., Corinth, Miss.
Boomer & Boschert Press Co., Syracuse, N. Y.
Brown Cotton Gin Co., New London, Conn.
Campbell, M., Fanning Mill Co., Detroit, Mich.
Cardwell Machine Co., Richmond, Va.
Carver Cotton Gin Co., E. Bridgewater, Mass.
Cheesman Cotton Gin Co., 76 William St., New York.
Continental Gin Co., Birmingham, Ala.
Dederick's, P. K., Sons, Albany, N. Y.
Gullett Gin Co., Amite City, La.
Kinsgland Mfg. Co., 1521 N. 11th St., St. Louis, Mo.
Liddell Co., Charlotte, N. C.
Lummus, F. H., Sons, & Co., Columbus, Ga.
Mecklenburg Iron Works, Charlotte, N. C.
Murray Co., Dallas, Tex.
Nordyke & Marmon Co., Indianapolis, Ind.

COTTON GINNING MACHINERY, continued

Perryman & Co., Birmingham, Ala.
Tompkins, D. A., Co., Charlotte, N. C.
Van Winkle, E., Gin & Machine Works, Atlanta, Ga.
Webster Mfg. Co., 118-126 North Ave., Chicago, Ill.

41 COUNTING MACHINES.

For counting the revolutions of moving parts.

Bowsher, N. P., Co., South Bend, Ind.
Durant, W. N., Milwaukee, Wis.
Veeder Mfg. Co., Hartford, Conn.
Warner Instrument Co., Beloit, Wis.
Wolf Co., Chambersburg, Pa.

42 CRUSHING MACHINERY.

43 CRUSHERS AND BREAKERS. For crushing or breaking rock, ore, etc.

Acme Road Machinery Co., Frankfort, N. Y.
Allentown Foundry & Machine Works, Allegheny, Pa.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Road Machine Co., Kennett Square, Pa.
Arizona & Sonora Mfg. Co., Nogales, Ariz.
Aultman Co., Canton, O.
Austin, F. C., Mfg. Co., Harvey, Ill.
Bacon, Earle C., 26 Cortlandt St., New York.
Carlin's, Thomas, Sons, Co., Allegheny, Pa.
Clearfield Machine Shops, Clearfield, Pa.
Climax Road Machine Co., Marathon, Pa.
Colorado Iron Works Co., Denver, Col.
Cresson, George V., Co., Allegheny Ave., W. of 17th St., Philda.
Davis, F. M., Iron Works Co., Denver, Col.
Denver Engineering Works, Denver, Col.
Denver Fire Clay Co., Denver, Col.
Diamond Drill & Machine Co., Birdsboro, Pa.
Exeter Machine Works, Pittston, Pa.
Exeter Machine Works, Exeter, N. H.
Farquhar, A. B., Co., Ltd., York, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Finch Mfg. Co., Scranton, Pa.
Fritsch, Arthur, Foundry & Machine Co., St. Louis, Mo.
Hendrie & Bolthoff, Denver, Col.
Hendy, Joshua, Machine Works, San Francisco, Cal.
Heyl & Patterson, Pittsburg, Pa.
Hogg, George A., Iron & Steel Foundry Co., Pittsburg, Pa.
Jeffrey Mfg. Co., Columbus, O.
Kenney & Co., Scottdale, Pa.
Kent Mill Co., 170 Broadway, New York.
Lake Shore Engine Works, Marquette, Mich.
Lancaster, James H., Co., 29 Cortlandt St., New York.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago, Ill.
Llewellyn Iron Works, Los Angeles, Cal.
McCully, R., 1334 Callowhill St., Philadelphia, Pa.
McLanahan & Stone, Hollidaysburg, Pa.
Mecklenburg Iron Works, Charlotte, N. C.
Mesta Machine Co., Pittsburg, Pa.

CRUSHERS AND BREAKERS, continued

Milholland, J. & J. B., Co., Pittsburg, Pa.
Mine & Smelter Supply Co., Denver, Col.
Monongahela Mfg. Co., Monongahela, Pa.
Montgomery, J. H., Machinery Co., Denver, Col.
Mullen, John, & Son, Shamokin, Pa.
Nelsonville Foundry & Machine Co., Nelsonville, O.
Northwestern Iron Works, Seattle, Wash.
Phillips & McLaren, Pittsburg, Pa.
Raymond Bros., Impact Pulverizer Co., 143 Laflin St., Chicago, Ill.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Scaife Foundry & Machine Co., Pittsburg, Pa.
Scholl, Julian, & Co., 126 Liberty St., New York.
Stroh, W. H. (Estate of), Mauch Chunk, Pa.
Stedman's Foundry & Machine Works, Aurora, Ind.
Sturtevant Mill Co., Harrison Sq., Boston, Mass.
Tamaqua Mfg. Co., Tamaqua, Pa.
Vulcan Iron Works, Wilkesbarre, Pa.
Union Iron Works, San Francisco, Cal.
Wallace, Samuel, White Haven, Pa.
Western Wheeled Scraper Co., Aurora, Ill.
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.
Yagle Foundry & Machine Co., Pittsburg, Pa.

44 GRINDING MILLS. For Grinding Bone, Cement, Chicory, Cinders, Clay, Coal, Coffee, Cork, Drugs, Spices, or any other dry substances.

Acton, John, 118 John St., Brooklyn, N. Y.
American Clay Working Machinery Co., Bucyrus, O.
American Engineering Co., Springfield, O.
Butterworth & Lowe, Grand Rapids, Mich.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Carey, Samuel, 17 State St., New York.
Clark, J. C., Atlanta, Ga.
Day, J. H., Co., Harrison Ave. & Bogue St., Cincinnati, O.
Dowling, Wm., & Co., Logansport, Ind.
Enterprise Mfg. Co., of Pa., N. 3d & Dauphin Sts., Philda.
Excel Mfg. Co., Pottersville, N. J.
Harrison, Leonard D., New Haven, Conn.
Holmes & Blanchard Co., 36 Washington St., Boston, Mass.
McLauthlin, Geo. T., Co., 120 Fulton St., Boston, Mass.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Messinger Mfg. Co., Tatamy, Pa.
Motter, Geo. F., & Sons, York, Pa.
Parker, Charles, Co., Meriden, Conn.
Raymond Bros., Impact Pulverizer Co., 143 Laflin St., Chicago, Ill.
Ross, Charles, & Son, 16 Steuben St., Brooklyn, N. Y.
Scaife Foundry & Machine Co., Ltd., Pittsburg, Pa.
Ruger, J. W., Mfg. Co., 214 Chicago St., Buffalo, N. Y.
Schutz-O'Neill Co., Minneapolis, Minn.
Simpson, J. S. & G. F., 26 Rodney St., Brooklyn, N. Y.
Sly, W. W., Mfg. Co., Cleveland, O.
Stedman Foundry & Machine Works, Aurora, Ind.
Straub Machinery Co., 1940 W. 6th St., Cincinnati, O.
Tyrone Foundry & Machine Co., Tyrone, Pa.
Vulcan Iron Works, Wilkesbarre, Pa.

GRINDING MILLS, continued

Walker & Elliott, Wilmington, Del.
Waterville Foundry & Mfg. Co., Waterville, N. Y.
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.
Wilson Bros., Easton, Pa.

45 **PULVERIZERS. For reducing dry substances to powder.**

Abbe Engineering Co., 220 Broadway, New York.
Bradley Pulverizer Co., 92 State St., Boston, Mass.
Braun, F. W., Co., Los Angeles, Cal.
Castle, Wilmot, Co., Rochester, N. Y.
Clark, J. C., Atlanta, Ga.
Day, J. H., Co., Harrison Ave. & Bogue St., Cincinnati, O.
Denver Fire Clay Co., Denver, Col.
Hance Bros. & White, Philadelphia, Pa.
Holmes & Blanchard Co., 36 Washington St., Boston, Mass.
Sackett, A. J., Baltimore, Md.
Raymond Bros., Impact Pulverizer Co., 143 Laflin St., Chicago, Ill.
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

46 DAIRY MACHINERY.

Separators, Aerators, Coolers, Aerator-Coolers, Testers, Milk Heaters, Sterilizers, Pasteurizers, Vats, Churns, Butter Workers, Printers, Cutters, Molds; Cream Ripeners, Curd Mills, Cheese Presses, Cheese Box Machines, etc.

American Separator Co., Bainbridge, N. Y.
Arras Cream Separator Co., Bluffton, O.
Aurora Cooperage Co., Aurora, Ill.
Barber, A. H., Creamery Supply Co., 229 S. Water St., Chicago, Ill.
Bluffton Cream Separator Co., Bluffton, O.
Brown, M., & Co., Wapakoneta, O.
Burrell, D. H., & Co., Little Falls, N. Y.
Castle Wilmot, Co., Rochester, N. Y.
Champion Milk Cooler Co., 23 Squires St., Cortland, N. Y.
Chapman, C. L., Cream Separator Works, Erie, Pa.
Cherry, J. G., Co., Cedar Rapids, Ia.
Cleveland Galvanizing Works Co., Cleveland, O.
Cornish, Curtis & Green Mfg. Co., Fort Atkinson, Wis.
Creamery Package Mfg. Co., 180 Kinzie St., Chicago, Ill.
Dairy Specialty Co., West Chester, Pa.
Dairymen's Supply Co., 1937 Market St., Philadelphia, Pa.
Davis Cream Separator Co., 54 N. Clinton St., Chicago, Ill.
De Laval Separator Co., 74 Cortlandt St., New York, N. Y.
Dobson Mfg. Co., Rockford, Ill.
Elgin Butter Tub Co., Elgin, Ill.
Empire Cream Separator Co., Bloomfield, N. J.
Fargo Creamery Supply House, Lake Mills, Wis.
Fenner, R. W., South Stockton, N. Y.
Flint Cabinet Creamery Co., Flint, Mich.
Fuller, Fred B., Gouverneur, N. Y.
Iowa Dairy Separator Co., Waterloo, Ia.
Jensen Mfg. Co., Topeka, Kans.
Jones, Frank L., Utica, N. Y.
McDermaid, J., Rockford, Ill.
Miller Pasteurizing Mch. Co., Canton, O.

DAIRY MACHINERY, continued

National Creamery Separator Co., Newark, N. J.
Ohio Cream Separator Co., Bluffton, O.
Omega Separator Co., 22 Concord St., Lansing, Mich.
Owatonna Manufacturing Co., Owatonna, Minn.
Palmer, H. H., Co., Rockford, Ill.
Reed, A. H., Creamery & Dairy Supply Co., 30th & Market Sts., Philadelphia, Pa.
Sanitary Cream Separator Co., Bluffton, O.
Sharples, P. M., West Chester, Pa.
Smith Cream Separator Co., Indianapolis, Ind.
Standard Churn Co., Wapakoneta, O.
Star Milk Cooler Co., Haddonfield, N. J.
Stoddard Manufacturing Co., Rutland, Vt.
Sturges & Burn Mfg. Co., Harrison & Green Sts., Chicago, Ill.
Vermont Farm Machine Co., Bellows Falls, Vt.
Wisconsin Dairy Supply Co., Whitewater, Wis.

47 DENTAL APPLIANCES.

Dental Engines, Vulcanizers, Burrs, Root Reamers, Trimmers, Nerve Broaches, Saliva Ejectors, etc.

Buffalo Dental Mfg. Co., Buffalo, N. Y.
Caulkins, H. J., & Co., Detroit, Mich.
Clark, A. C., & Co., Randolph St. & Michigan Ave., Chicago.
Canton Surgical & Dental Chair Co., Canton, O.
Chase Combination Dental Plate Co., Omaha, Neb.
Consolidated Dental Mfg. Co., 130 Washington Pl., New York.
Detroit Dental Mfg. Co., Detroit, Mich.
Hammond, John F., 35 W. 125th St., New York.
Justi, H. D., & Sons, 1301 Arch St., Philadelphia, Pa.
Lukens & Whittington, 624 Race St., Philadelphia, Pa.
McConnell, J. W., Cornelia, Ga.
Oliver, W. W., Mfg. Co., 1483 Niagara St., Buffalo, N. Y.
Pilling, Geo. P., & Son, Philadelphia, Pa.
Ritter Dental Mfg. Co., Rochester, N. Y.
Sibley, Gideon, 1218 Filbert St., Philadelphia, Pa.
Sims Hydraulic Engine Co., Lincoln, Neb.
Snow Dental Co., Buffalo, N. Y.
League Dental Supply Co., Augusta, Ga.
U. S. Dental Mfg. Co., Cleveland, O.
Victor Electric Co., 55 Market St., Chicago, Ill.
White, S. S., Dental Mfg. Co., Chestnut & S. 12th Sts., Philda.

48 DISH WASHING MACHINES.

Hamilton-Low Co., 219 E. 42d St., New York.
Parish Machine Co., 742 E. 12th St., New York.
Van Range, John, Co., 419 Elm St., Cincinnati, O.

49 DISTILLING APPARATUS.

Blymyer Iron Works Co., Indianapolis, Ind.
Nordyke & Marmon Co., Indianapolis, Ind.
Squier, George L., Mfg. Co., Buffalo, N. Y.

50 FRESH WATER.

Davidson, M. T., 133 Liberty St., New York.

DISTILLING APPARATUS, FRESH WATER, continued

Newburgh Ice Machine & Engine Co., Newburgh, N. Y.
Wolf, Fred W., Co., 139 Rees St., Chicago, Ill.

51 TURPENTINE.

Connell, J. D., Iron Works, 1207 S. Peters St., New Orleans, La.

52 DIVING APPARATUS.

Divers' Helmets, Air Pumps, etc.

Goodyear Rubber Co., & Rubber Clothing Co., 787 Broadway, New York.
Morse, Andrew J., & Son, 140 Congress St., Boston, Mass.
Schrader's, A., & Son, 30 Rose St., New York.

53 DRAUGHTSMEN'S TOOLS.

Liners, Triangles, T Squares, Trammel Points, Drawing Boards, etc.

Albrecht, Charles R., 62 Fulton St., New York.
Alexander, J. G., Mfg. Co., Grand Rapids, Mich.
Aloe, A. S., & Co., 415 N. Broadway, St. Louis, Mo.
Alteneder, Theo., & Sons, 945 Ridge Ave., Philadelphia, Pa.
American Shading Machine Co., 145 Mayer Ave., Black Rock, Buffalo, N. Y.
Benot, A. V., 10 W. 33d St., New York.
Brown & Sharpe Mfg. Co., Providence, R. I.
Dietzgen, Eugene, Co., 181 Monroe St., Chicago, Ill.
Friedrichs, E. H., 140 Sullivan St., New York.
Gurley, W., & L. E., Troy, N. Y.
Hoyt, L. E., & Co., Walton, N. Y.
Indianapolis Blue Print Co., Indianapolis, Ind.
Kelsey, D. J., New Haven, Conn.
Keuffel & Esser Co., 127 Fulton St., New York.
Schwencke, Kirk & Co., 26 Church St., New York.
Starrett, L. S., Co., Athol, Mass. *See adv. page 4.*
Universal Drafting Machine Co., 220 Seneca St., Cleveland, O.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa.
Wyke, J., & Co., East Boston, Mass.

54 BLUE PRINT MACHINES.

Dietzgen, Eugene, Co., 181 Monroe St., Chicago, Ill.
Johnson-Prentice Co., Worcester, Mass.
Keuffel & Esser Co., 127 Fulton St., New York.
Keystone Blue Paper Co., 160 Adams St., Chicago, Ill.
Pittsburg Blue Print Co., 1505 C. Park Bldg., Pittsburg, Pa.
Spaulding Print Paper Co., 44 Federal St., Boston, Mass.

55 DREDGING AND EXCAVATING MACHINERY.

Atlantic, Gulf & Pacific Co., 220 Market St., San Francisco.
Bartlett, A. F., & Co., Saginaw, Mich.
Bucyrus Co., South Milwaukee, Wis.
Carlin, W. J., Co., 25th & A. V. R. R., Pittsburg, Pa.
Featherstone Foundry & Machine Co., 348 Halsted St., Chicago, Ill.
Fritsch, Arthur, Foundry & Machine Co., 216 Gratiot St., St. Louis, Mo.

DREDGING AND EXCAVATING MACHINERY, continued

Globe Iron Works, Inc., Stockton, Cal.
Great Lakes Engineering Works, Detroit, Mich.
Hardie-Tynes Foundry & Machine Co., Birmingham, Ala.
Industrial Works, Bay City, Mich.
Jackson & Church Co., Saginaw, Mich.
Jeffrey Mfg. Co., Columbus, O.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Krogh Mfg. Co., San Francisco, Cal.
Lake City Engineering Co., Erie, Pa.
Marion Steam Shovel Co., Marion, O.
Municipal Eng. & Contracting Co., Chicago, Ill.
Norman & Evans, Lockport, N. Y.
Ohio Steam Shovel Co., Toledo, O.
Osgood Dredge Co., Albany, N. Y.
Poole Engineering & Machine Co., Baltimore, Md.
Portland Co., Inc., Portland, Me.
Puget Sound Bridge & Dredging Co., Seattle, Wash.
Riley & Cowley, Richards & Browne Sts., Brooklyn, N. Y.
Risdon Iron & Locomotive Works, San Francisco, Cal.
Smith, Theo., & Sons, Co., Foot of Essex St., Jersey City, N. J.
Toledo Foundry & Machine Co., Toledo, O.
Townsend Furnace & Machine Shop, Albany, N. Y.

56 DITCHING MACHINES.

American Road Machine Co., Kennett Square, Pa.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Benicia Agricultural Works, San Francisco, Cal.
Carson, French, Machine Co., 16 Dorrance St., Boston, Mass.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Enterprise Mfg. Co., Columbiana, O.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Marion Steam Shovel Co., Marion, O.
Osgood Dredge Co., Albany, N. Y.
Shuart Grader Co., Oberlin, O.
Van Buren, Heck, & Marvin Co., Findlay, O.
Western Wheeled Scraper Co., Aurora, Ill.
Vulcan Iron Works, 63 Milwaukee St., Chicago, Ill.
Vulcan Iron Works Co., Toledo, O.

57 STEAM SHOVELS.

Atlantic, Gulf & Pacific Co., San Francisco, Cal.
Bucyrus Co., S. Milwaukee, Wis.
Kilgore Machine Co., Minneapolis, Minn.
Marion Steam Shovel Co., Marion, O.
Ohio Steam Shovel Co., Toledo, O.
Osgood Dredge Co., Albany, N. Y.
Thew Automatic Shovel Co., Lorain, O.
Toledo Foundry & Machine Co., Toledo, O.
Vulcan Iron Works Co., Toledo, O.

58 DRYING APPARATUS.

For drying Brewers' Grain, Beet Pulp, Garbage, Sand, Clay, Ore, etc.

Abbe Engineering Co., 220 Broadway, New York.
Adt, John B., Machine Works, 332 N. Holliday St., Baltimore.
American Blower Co., Detroit, Mich.

DRYING APPARATUS, continued

American Mfg. Co., Waynesboro, Pa.
American Process Co., 62 William St., New York.
American Vacuum Drying Machine Co., 120 Liberty St., N. Y.
Arnold-Creager Co., Cincinnati, O.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Bayley, Wm., & Sons, Co., Milwaukee, Wis.
Blymyer Iron Works Co., Cincinnati, O.
Bonnot Co., Canton, O.
Boston Blower Co., Hyde Park, Mass.
Caldwell Machine Co., Richmond, Va.
Case Mfg. Co., Columbus, O.
Crown Dryer Co., Cleveland, O.
Cummer, E. D., & Son, Co., Cleveland, O.
Cutler Co., North Wilbraham, Mass.
Davenport Foundry & Machine Co., Davenport, Ia.
Day, J. H., Co., Harrison Ave. & Bogue St., Cincinnati, O.
Dempwolf, C. H., & Co., York, Pa.
Great Western Mfg. Co., Leavenworth, Kan.
Hersey Mfg. Co., South Boston, Mass.
Hess Warming & Ventilating Co., La Salle & Madison Sts., Chicago, Ill.
Hooper Drying Machine Co., Produce Exchange Bldg., N. Y.
Howe Mfg. Co., Scranton, Pa.
Howes, S., Co., Silver Creek, N. Y.
Krueger Machine Co., Newark, N. J.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Mayo, Hysore, & Co., Richmond, Va.
Morris, Henry G., 926 Drexel Bldg., Philadelphia, Pa.
Mosser, W. F., & Sons, Allentown, Pa.
Newhall, Geo. M., Engineering Co., 136 S. 4th St., Philda.
Nordyke & Marmon Co., Indianapolis, Ind.
Paine-Ellis Grain Drier Co., Milwaukee, Wis.
Parkhurst & Wilkinson Co., 143 Kinzie St., Chicago, Ill.
Pawling & Harnischfeger, Milwaukee, Wis.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Pittsburg Dryer Co., Cleveland, O.
Pratt, Henry, Boiler & Machine Co., 869 S. Halsted St., Chicago, Ill.
Rawson & Morrison Mfg. Co., Inc., Cambridgeport, Mass.
Ruggles-Coles Engineering Co., 39 Cortlandt St., New York.
St. Albans Mfg. Co., St. Albans, Vt.
Simonds Furnace Co., 50 Cliff St., New York.
Smith, Theo., & Sons, Co., Foot of Essex St., Jersey City, N. J.
Sperry, D. R., & Co., Batavia, Ill.
Squier, Geo. L., Mfg. Co., Buffalo, N. Y.
Stevenson Co., Wellsville, O.
Struthers-Wells Co., Warren, Pa.
Townsend Furnace & Machine Shop, Albany, N. Y.
Turney Drier Co., Louisville, Ky.
Walsh, James T., 62 Fulton St., Chicago, Ill.
Warner, D. M., Sparta, N. Y.
Waterville Foundry & Mfg. Co., Waterville, N. Y.
Wellington Machine Co., Wellington, O.
Worrell, S. E., Hannibal, Mo.

59 **KILNS. For drying Lumber, Bricks, etc.**

American Blower Co., Detroit, Mich.

KILNS, continued

Andrews, A. H., Co., 176 Wabash Ave., Chicago, Ill.
Barron Dryer Co., 225 Dearborn St., Chicago, Ill.
Bayley, William, & Sons, Co., Milwaukee, Wis.
Boss, John, Elkhart, Ind.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Deeley, R., & Co., 541 W. 32d St., New York.
Dorrance, Chas. J., 138 E. Jackson Blvd., Chicago, Ill.
Dun, H. C., Erie, Pa.
Emerson Co., Baltimore, Md.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.
Haigh, H., Catskill, N. Y.
Illinois Supply & Construction Co., St. Louis, Mo.
Leitelt, Adolph, Iron Works, Grand Rapids, Mich.
Link, E. M., Machinery Co., Erie, Pa.
National Blower Works, Milwaukee, Wis.
National Dry Kiln Co., Indianapolis, Ind.
Perfect Combustion Co., Philadelphia, Pa.
Ridgway Mfg. Co., Ridgway, Pa.
Riter-Conley Co., Pittsburg, Pa.
Southern Blow Pipe Mfg. Co., New Orleans, La.
Standard Dry Kiln Co., Indianapolis, Ind.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Youngrew, P. L., Milwaukee, Wis.

60 DUPLICATORS, MANUSCRIPT, ETC.

Autographic Register Co., 430 W. 14th St., New York.
Daus, Felix F., Duplicator Co., 111 John St., New York.
Dick, A. B., Co., 161 W. Jackson Blvd., Chicago, Ill.
Grunfeld, Adolph P., 231 Pearl St., New York.
Hektograph Mfg. Co., 42 Murray St., New York.
Neostyle Co., 30 Reade St., New York.
Schapirograph Co., 265 Broadway, New York.

61 MIMEOGRAPHS.

Dick, A. B., Co., 161 W. Jackson Blvd., Chicago, Ill.
Mason, W. P., Carthage, N. Y.

62 DUST COLLECTORS.

Allington & Curtis Mfg. Co., Saginaw, Mich.
American Blower Co., Detroit, Mich.
Bayley, William, & Sons, Co., Milwaukee, Wis.
Champion Thresher Co., Orrville, O.
Cincinnati Exhaust & Blow Pipe Co., Cincinnati, O.
Clark-Miller Co., Seattle, Wash.
Dixie Mfg. Co., Greensboro, N. C.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.
Grand Rapids Blow Pipe & Dust Arrester Co., Grand Rapids, Mich.
Hartford Blower Co., Hartford, Conn.
Lee, Thomas, 211 Race St., Cincinnati, O.
Meadons, T. J., Sons, 51 Greenpoint Ave., Brooklyn, N. Y.
National Blower Works, Milwaukee, Wis.
Nordyke & Marmon Co., Indianapolis, Ind.
Ohio Blow Pipe Co., Cleveland, O.
Porbeck Bros., Mfg. Co., 2017 N. Broadway, St. Louis, Mo.

DUST COLLECTORS, continued

Prinz & Rau Mfg. Co., Milwaukee, Wis.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn. *See adv. page 82.*
Turner & Brady, 34 W. Washington St., Chicago, Ill.

63 ENVELOPE SEALING MACHINES.

Morris-Hall Mail Closer Co., 505 Unity Bldg., Chicago, Ill.
Rapid Envelope Sealing Co., 150 Nassau St., New York.
Rau, Emanuel, 211 Centre St., New York.
Thexton Electric Envelope Sealer Co., 150 Nassau St., N. Y.

64 EYELETTING MACHINES.

Krieg, J. K., & Co., 39 Warren St., New York.
National Machine Co., 561 Broadway, New York.
Sibley, E. L., Bennington, Vt.
Stimpson, Edwin B., & Son, 31 Spruce St., New York.

65 FANS, EXHAUST, VENTILATING, ETC.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Blower Co., Detroit, Mich.
American Gas Furnace Co., 23 John St., New York.
Backus Water Motor Co., Newark, N. J.
Baird Machinery Co., Pittsburg, Pa.
Barnard & Leas Mfg. Co., Moline, Ill.
Bates, D. L., & Bro., Dayton, O.
Bayley, William, & Sons, Co., Milwaukee, Wis.
Belleville Pump & Skein Works, Belleville, Ill.
Berry, A. Hun, 23 W. 1st St., Boston, Mass.
Boston Blower Co., Hyde Park, Mass.
Broomell, Schmidt & Co., Ltd., York, Pa.
Buffalo Forge Co., Buffalo, N. Y.
C. & C. Electric Co., 143 Liberty St., New York.
Caldwell Machine Co., Richmond, Va.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Water Motor & Fan Co., 22 Canal St., Chicago, Ill.
Clark, George P., Windsor Locks, Conn.
Colorado Iron Works Co., Denver, Col.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York.
Crawford & McCrimmon, Brazil, Ind.
Crowell, Gilmer, 294 Graham St., Brooklyn, N. Y.
Danville Foundry & Machine Works, Danville, Ill.
Diehl Mfg. Co., Elizabethport, N. J.
Eagle Iron Works, Des Moines, Ia.
Exeter Machine Works, Exeter, N. H.
Finch Mfg. Co., Scranton, Pa.
Foos Mfg. Co., Springfield, O.
Garden City Fan Co., 42 S. Clinton St., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Herzler & Henninger Machine Works, Belleville, Ill.
Howard & Morse, 45 Fulton St., New York.
Hunter Fan & Motor Co., Fulton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Kenney & Co., Scottdale, Pa.
Litchfield Foundry & Machine Co., Litchfield, Ill.

FANS, EXHAUST, ETC., continued

Lummus, F. H., Sons, Columbus, Ga.
McLeod, Ward, & Co., 27 Thames St., New York.
Marine Iron Co., Bay City, Mich.
Milholland, J. & J. B., Co., Pittsburg, Pa.
Monongahela Mfg. Co., Monongahela, Pa.
Mullen, John, & Son, Shamokin, Pa.
Nelsonville Foundry & Machine Co., Nelsonville, O.
Ottumwa Iron Works, Ottumwa, Ia.
Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*
Porbeck Bros., Mfg. Co., 2017 N. Broadway, St. Louis, Mo.
Raymond Bros., Impact Pulverizer Co., 143 Laflin St., Chicago, Ill.
Robinson Machine Co., Monongahela, Pa.
Seymour & Whitlock, Newark, N. J.
Simonds Furnace Co., 50 Cliff St., New York.
Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Sullivan Machinery Co., 135 Adams St., Chicago, Ill.
Tamaqua Mfg. Co., Tamaqua, Pa.
Tolhurst, W. H., & Son, Troy, N. Y.
Unadilla Machine Works, Unadilla, N. Y.
Vulcan Iron Works, Wilkesbarre, Pa.
Wagner Palmros Mfg. Co., Fairmont, W. Va.

66 FERTILIZER MACHINERY.

Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Carey, Samuel, 17 State St., New York.
Dempwolf, C. H., & Co., York, Pa.
Ellicott Machine Co., Baltimore, Md.
Kehoe, Wm., & Co., Savannah, Ga.
Murray Iron Works Co., Burlington, Ia.
Poole Engineering & Machine Co., Baltimore, Md.
Ross, Charles, & Son, 16 Steuben St., Brooklyn, N. Y.
Sackett, A. J., 5th Ave & 1st St., Baltimore, O.
Stillwell-Bierce & Smith-Vaile Co., Dayton, O.
Sturtevant Mill Co., Harrison Sq., Boston, Mass.
Valk & Murdock Iron Works, 14 Hasell St., Charleston, S. C.
Van Winkle, E., Gin & Machine Works, Atlanta, Ga.
Walker & Elliott, Wilmington, Del.

67 FILTERS, WATER.

American Sterilizer Co., Erie, Pa.
Berkefield Filter Co., 4 Cedar St., New York.
Boston Filter Co., Chelsea, Mass.
Champion Safety Lock Co., Cleveland, O.
Driesbach, L., & Co., 1407 N. 8th St., Philadelphia, Pa.
Hygeia Filter Co., Detroit, Mich.
Imperial Filter Co., St. Louis, Mo.
International Filter Co., 1702 Wabash Ave., Chicago, Ill.
Jackson Filter Mfg. Co., St. Louis, Mo.
Jones Mfg. Co., 243 Franklin St., Boston, Mass.
Loomis-Manning Filter Co., 828 Land Title Bldg., Philda.
Lynn Filtering Co., Cincinnati, O.
McNally, Robert J., 5618 Germantown Ave., Germantown, Philadelphia, Pa.
Metropolitan Filter Co., 163 Washington St., Chicago, Ill.

FILTERS, WATER, continued

New York Continental Jewell Filtration Co., 15 Broad St., New York.
Norwood Engineering Co., Florence, Mass.
Paddock Water Filter Co., Buffalo, N. Y.
Pasteur Chamberland Filter Co., Dayton, O.
Peake Filter Co., 703 Pine St., St. Louis, Mo.
Planet Mfg. Co., St. Louis, Mo.
Roberts Mfg. Co., 3011 Chestnut St., Philadelphia, Pa.
Squier Filter Co., Dayton, O.
Walworth Mfg. Co., 132 Federal St., Boston, Mass.
Welsh, William, Cincinnati, O.

68 WATER SOFTENING APPARATUS.

American Water Softener Co., Harrison Bldg., Philadelphia.
Industrial Water Co., 126 Liberty St., New York.
Kennicott Water Softener Co., 77 E. Jackson Blvd., Chicago.
New York Continental Jewell Filtration Co., 15 Broad St., New York.
Palatable Water Still Co., 28 State St., Boston, Mass.
Scaife, Wm. B., & Sons, 221 1st Ave., Pittsburg, Pa.

69 FIRE APPARATUS.

Abbot-Downing Co., Concord, N. H.
American Air Moistening Co., Equitable Bldg., Boston, Mass.
American Fire Engine Co., Seneca Falls, N. Y.
Automatic Fire Alarm & Extinguisher Co., Ltd., 413 Broadway, New York.
Badger Fire Extinguisher Co., 32 Portland St., Boston, Mass.
Delaney Oil & Lubricant Co., 3d & Fowler Sts., Milwaukee.
Esty Sprinkler Co., Laconia, N. H.
Fairbanks Co., Broome & Elm Sts., New York.
Fenton & Dunn, Holyoke, Mass.
Fire Extinguisher Mfg. Co., 357 Canal St., New York.
General Fire Extinguisher Co., Providence, R. I.
Gleason & Bailey Mfg. Co., 181 Mercer St., New York.
Goulds Mfg. Co., Seneca Falls, N. Y.
Harden Hand Grenade Fire Extinguisher Co., 6213 Wentworth Ave., Chicago, Ill.
Hersey Mfg. Co., South Boston, Mass.
Hess, Snyder, & Co., Massillon, O.
Howe, G. S. & A. J., Co., Worcester, Mass.
Independent Fire Sprinkler Co., 30 W. Monroe St., Chicago.
International Fire Engine Co., 149 Broadway, New York.
Johns, H. W.-Manville Co., 100 William St., New York.
La France Fire Engine Co., Elmira, N. Y.
Lindgren-Mahan Fire Apparatus Works, 793 W. Lake St., Chicago, Ill.
Liquid Carbonic Acid Mfg. Co., 75 Illinois St., Chicago, Ill.
Meyrose, F., Lamp & Mfg. Co., St. Louis, Mo.
Monarch Fire Appliance Co., 247 Pearl St., New York.
Muskegon Chemical Fire Engine Co., Muskegon, Mich.
Nathan Mfg. Co., 92 Liberty St., New York.
National Automatic Fire Alarm Co., 317 Broadway, New York.
Obenchain & Boyer, Logansport, Ind.
Peck Bros., & Co., New Haven, Conn.
Phoenix Appliance Co., 15 W. 28th St., New York.

FIRE APPARATUS, continued

Racine Babcock Fire Extinguisher Co., South Milwaukee, Wis.
Spangler Mfg. Co., York, Pa.
Universal Automatic Fire Extinguisher Co., 112 S. Orianna St., Philadelphia, Pa.
Walworth Mfg. Co., 132 Federal St., Boston, Mass.
Williams, E. A., & Son, Jersey City, N. J.

70 FLAX SEED MACHINERY.

Barnard & Leas Mfg. Co., Moline, Ill.
Johnson & Field Mfg. Co., Racine, Wis.

71 FLY NET MACHINERY.

Osborne, H. F., Co., Newark, N. J.

72 FORGES.

American Gas Furnace Co., 23 John St., New York.
Boston Blower Co., Hyde Park, Mass.
Boynton & Plummer, Worcester, Mass.
Bradley & Co., Syracuse, N. Y.
Brown & Patterson, Marcy Ave. & Hope St., Brooklyn, N. Y.
Buffalo Dental & Mfg. Co., Buffalo, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Cahill, Swift & Co., 408 N. 4th St., St. Louis, Mo.
Canton Foundry & Machine Co., Canton, O.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
Cleveland City Forge & Iron Co., Cleveland, O.
Empire Forge Co., Troy, N. Y.
Louisville Steam Forge Co., Louisville, Ky.
Miner & Peck Mfg. Co., New Haven, Conn. *See adv. page 36.*
National Cement & Rubber Mfg. Co., Toledo, O.
Putnam Machine Co., Fitchburg, Mass.
Roots, P. H. & F. M., Co., Connersville, Ind.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.
Silver Mfg. Co., Salem, O.
Sturtevant, B. F., Co., Jamaica Plain, Mass.

73 PORTABLE.

Boynton & Plummer, Worcester, Mass. *See adv. page 28.*
Bradley Co., Syracuse, N. Y.
Brown & Patterson, Marcy Ave. & Hope St., Brooklyn, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Chapman, H. L., Marcellus, Mich.
Chicago Scale Co., 292 Jackson Blvd., Chicago, Ill.
Cleveland Steam Gauge Co., Cleveland, O.
Cumming, David, Chicago, Ill.
Empire Forge Co., Troy, N. Y.
Fairbanks Co., Elm & Broome Sts., New York.
Foos Mfg. Co., Springfield, O.
Garratt, W. T., & Co., Inc., San Francisco, Cal.
Potts, David H., Lancaster, Pa.
Rich, E. B., & Son, 52 W. Washington St., Chicago, Ill.
Roots, P. H. & F. M., Co., Connersville, Ind.
Star Forge Co., Buffalo, N. Y.
Sturtevant, B. F., Co., Jamaica Plain, Mass.

74 FURNACES.

75 ANNEALING.

Acme Gas Co., 1010 Monadnock Blk., Chicago, Ill.
American Gas Furnace Co., 23 John St., New York. *See adv. page 64.*
American Furnace & Machine Co., Pittsburg, Pa.
Bates Machine Co., Joliet, Ill.
Bernz, Otto, Newark, N. J.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Billings & Spencer Co., Hartford, Conn. *See adv. page 70.*
Brown & Sharpe Mfg. Co., Providence, R. I.
Chicago Flexible Shaft Co., La Salle & Ontario Sts., Chicago, Ill. *See adv. page 125.*
Crosby Co., Buffalo, N. Y.
Forter-Miller Engineering Co., Pittsburg, Pa.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York.
Lunkenheimer Co., Cincinnati, O.
Mackenzie, Duncan, & Sons, Trenton, N. J.
Manchester, C. B., Gas Furnace Co., Providence, R. I.
Morgan Construction Co., Worcester, Mass.
Railway Materials Co., Old Colony Bldg., Chicago, Ill.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Rockwell Engineering Co., 26 Cortlandt St., New York. *See adv. page 125.*
Turner Brass Works, 50 N. Franklin St., Chicago, Ill.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Westmacott, J. M., Co., Providence, R. I.
White Mfg. Co., 192 Michigan St., Chicago, Ill.

76 BLAST.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Carroll-Porter Boiler & Tank Co., Pittsburg, Pa.
Colorado Iron Works Co., Denver, Col.
Mackintosh, Hemphill & Co., Pittsburg, Pa.
Munroe, R., & Son, Pittsburg, Pa.
Rarig, A. K., Engineering Co., Columbus, O.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Weimer Machine Works Co., Lebanon, Pa.

77 COPPER, BRASS, ETC., MELTING.

Auburn Reduction & Smelting Furnace Co., Auburn, N. Y.
Byram & Co., 435 Guoin St., Detroit, Mich.
Hawley Down Draft Furnace Co., 59 Townsend St., Chicago.
Johnson Service Co., Milwaukee, Wis.
Littleford Bros., 435 E. Pearl St., Cincinnati, O.
Monarch Engineering & Mfg. Co., Baltimore, Md.
Paxson, J. W., Co., 1021 Delaware Ave., Philadelphia, Pa.
Rockwell Engineering Co., 26 Cortlandt St., New York. *See adv. page 125.*
Sheriff's Mfg. Co., 124 Barclay St., Milwaukee, Wis.
Smith, J. D., Foundry Supply Co., 40 S. Water St., Cleveland.
Whiting Foundry Equipment Co., Harvey, Ill.

78 ELECTRIC SOLDERING.

Dicke Tool Co., Downer's Grove, Ill.

79 PLUMBERS' AND TINNERS'.

Bernz, Otto S., Newark, N. J.

FURNACES, PLUMBERS', continued

Burgess, J., & Sons, 238 N. 3d St., Columbus, O.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Conran, Wm. F., 305 Pearl St., New York.
Crane, Wm. M., Co., 1133 Broadway, New York.
Dicke Tool Co., Downer's Grove, Ill.
Gefrorer, C., & Son, 248 N. 8th St., Philadelphia, Pa.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Haines, Jones & Cadbury Co., 1136 Ridge Ave., Philadelphia.
Hull, M. L., Co., 28 Broadway, Cleveland, O.
Hydrocarbon Burner Co., 197 Fulton St., New York.
Jacobson Machine Mfg. Co., Warren, Pa.
Klein, Mathias, & Son, 87 W. Van Buren St., Chicago, Ill.
Leather & Brass Mfg. Co., Auburn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Schneider & Trenkamp Co., Cleveland, O.
Union Heater Supply Co., 13 Macomb St., Detroit, Mich.
White Mfg. Co., 192 Michigan St., Chicago, Ill.

80 SMELTING, CALSING, ETC.

Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
Braun, F. W., & Co., Los Angeles, Cal.
Colorado Iron Works Co., Denver, Col.
Davis, F. M., Iron Works Co., Denver, Col.
Denver Engineering Works Co., Denver, Col.
Enterprise Boiler Co., Youngstown, O.
Fulton Iron Works, San Francisco, Cal.
Mecklenburg Iron Works, Charlotte, N. C.
Mine & Smelter Supply Co., Denver, Col.
Pollock, W. B., & Co., Youngstown, O.
Power & Mining Machinery Co., 52 William St., New York.
Stearns-Rogers Mfg. Co., 1718 California St., Denver, Col.
Union Iron Works, San Francisco, Cal.
Union Iron Works, Inc., Spokane, Wash.

81 FURRIERS' MACHINERY AND TOOLS.

Fur Formers, Sizers, Pouncers, Choppers, Dipping Machines, Body Formers, Dusters, Carroting Machines, Cutters, etc.

Excelsior Sewing Machine Co., 584 Hudson St., New York.
Morlock & Husk, Danbury, Conn.
New Machine Co., Danbury, Conn.
Westpfal, F., 194 E. Houston St., New York.

82 GAS MANTLE MACHINERY.

Advance Machine Co., 194 S. Clinton St., Chicago, Ill.

83 GAS PRODUCERS AND GAS WORKS MACHINERY.

Acetylene Apparatus Mfg. Co., 157 Michigan Ave., Chicago.
Acetylene Generator & Mfg. Co., St. Marys, O.
Acme Gas Co., 1010 Monadnock Blk., Chicago, Ill.
American Acetylene Stove Co., 504 Masonic Temple, Minneapolis, Minn.
American Furnace & Machine Co., Publication Bldg., Pittsburg, Pa.

GAS WORKS MACHINERY, continued

American Gas Furnace Co., 23 John St., New York.
Aurora Acetylene Co., Chattanooga, Tenn.
Beaver Mfg. Co., Beaver, Pa.
Charbeneau, John C., Mt. Clemens, Mich.
Colonial Foundry & Machinery Co., 251 W. Broadway, N. Y.
Colt, J. B., Co., 21 Barclay St., New York.
Cox Bros., & Co., Bridgeton, N. J.
Daugherty, W. E., Princeton, Ind.
Davis Acetylene Co., Elkhart, Ind.
Detroit Heating & Lighting Co., Detroit, Mich.
Dixon, H. L., Co., 8 Wood St., Pittsburg, Pa.
Draper Mfg. & Gas Co., Dana, Ind.
Duff Patents Co., 918 Frick Bldg., Pittsburg, Pa.
Eagle Generator Co., St. Louis, Mo.
Epworth Gas Light & Heating Co., Waterloo, Ia.
Forter-Miller Engineering Co., Pittsburg, Pa.
Freeman, Delbert O., Binghamton, N. Y.
Gas Machinery Co., Cleveland, O.
General Acetylene Co., 80 Broadway, New York.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Imperial Gas Machine Co., 36 Park Place, New York.
Incandescent Light & Stove Co., E. Pearl St., Cincinnati, O.
International Heater Co., Utica, N. Y.
Isbell-Porter Co., 245 Broadway, New York.
Kemp, C. M., Mfg. Co., Baltimore, Md.
Laughlin, Alex., & Co., Pittsburg, Pa.
Monarch Acetylene Gas Co., Omaha, Neb.
Niagara Falls Acetylene Gas Generator Co., Niagara Falls, N. Y.
Northern Gas Machine Co., 632 Boston Blk., Minneapolis, Minn.
Owen, George F., Grand Rapids, Mich.
Penn Globe Gas Light Co., 1934 Market St., Philadelphia, Pa.
Perfect Gas Machine Co., Rouses Point, N. Y.
Rex Acetylene Generator Co., Binghamton, N. Y.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Smythe, S. R., Co., Inc., Pittsburg, Pa.
Sober, C. K., & Porter, Lewisburg, Pa.
Sunlight Gas Machine Co., 261 Broadway, New York.
Superior Gas Generator Co., Minneapolis, Minn.
Swindell, Wm., & Bros., 6th Ave. & Wood St., Pittsburg, Pa.
Tirrill Gas Machine Lighting Co., 441 Broadway, New York.
Victoria Mfg. Co., Auburn, Me.
Walworth Mfg. Co., 128 Federal St., Boston, Mass.
Wellman-Seaver-Morgan Co., Cleveland, O.
White Mfg. Co., 192 Michigan St., Chicago, Ill.
Wood, R. D., 400 Chestnut St., Philadelphia, Pa.

84 GLASS WORKS MACHINERY.

Molds, Presses, Blow Pipes, Crack-off Machines, Grinding Machines, Glass Melting Pots, Glass Melting Tank Blocks, Stoppers, Lehrs, etc.

Acton, John, 118 John St., Brooklyn, N. Y.
American Furnace & Machine Co., Pittsburg, Pa.
Arduser, C., & Co. Cicero, Ind.
Aurora Fire Clay Co., Bluffton, Ind.

GLASS WORKS MACHINERY, continued

Brooke & Shields, 44 Barclay St., New York.
Cox & Sons Co., Bridgeton, N. J.
Dixon, H. L., Co., 8 Wood St., Pittsburg, Pa.
Donahue, Thomas J., Baltimore, Md.
Douchamp, Henry, 7 Bennett St., Bradford, Pa.
Findlay Clay Pot Co., Findlay, Ohio.
Gill Bros., Muncie, Ind.
Harbison-Walker Refractories Co., Pittsburg, Pa.
Holden, C. Edwards, Mineral City, O.
Homan, J. & E., 378 West Broadway, New York.
Keefer Mould Works, Gas City, Ind.
Koeppen Mold Works, Marion, Ind.
Leng Glass Factory Mchy Co., 1917 Mary St. S. S., Pittsburg, Pa.
McKee, W. S., 237 First Ave., Pittsburg, Pa.
Ohio Valley Clay Co., Steubenville, Ohio.
Pittsburg Clay Pot Co., 1247 Rebecca St., Allegheny, Pa.
Rodefer, T. A., Bellaire, Ohio.
Shaw, A. J., Mould Works, Bridgeton, N. J.
Slocum, George S., Newport, R. I.
Smythe, S. R., Co., House Bldg., Pittsburg, Pa.
Sommerfeld Machine & Mfg. Co., 224 Third Ave., Pittsburg, Pa.
Trenton Fire Brick Co., Trenton, N. J.
Van Buren, Heck & Marvin Co., Findlay, O.
Velte Foundry & Machine Co., Pittsburg, Pa.
West Penn Foundry & Machine Co., Avonmore, Pa.
Wheeling Mould & Foundry Co., Wheeling, W. Va.
Woods-Lloyd Co., So. 30th & Jane Sts., Pittsburg, Pa.
Yockel Mould Works, Philadelphia, Pa.

85 GLOVE MACHINERY.

Anthony, H. J., Gloversville, N. Y.
Brooks, Chas. A., Gloversville, N. Y.
Curtin-Hebert Mfg. Co., Gloversville, N. Y.
Haags Cutting Die Works, Gloversville, N. Y.

86 GLYCERINE MACHINERY.

Jobbins, Wm. F., Aurora, Ill.

87 GUNPOWDER MACHINERY.

Wheel Mills, Dry Pans, Soda Beaters, Corning Mills, Glaze Barrels, Charcoal Barrels, etc.

Allentown Foundry & Machine Works, Allentown, Pa.
Baugher, Kurtz & Co., Ltd., York, Pa.
Birmingham Iron Foundry, Derby, Conn.
Hess Warming & Ventilating Co., La Salle & Madison Sts., Chicago, Ill.
Kaestner & Co., 241 S. Jefferson St., Chicago, Ill.
Scott, Olin, Bennington, Vt.
Watson-Stillman Co., 46 Dey St., New York.

88 HARNESS MACHINERY.

Strap Punching and Cutting Machines, Harness Riveting Machines, Collar Blocking Machines, etc.

Belcher Bros., & Co., Irvington, N. J.
Brownson, B., & Co., St. Paul, Minn.
Fargo Mfg. Co., Lake Mills, Wis.
Hammond, C., & Son, Ogontz, Pa.
National Sewing Machine Co., Boston, Mass.
Osborne, C. S., & Co., Newark, N. J.
Puritan Mfg. Co., 72 Lincoln St., Boston, Mass.
Randall & Co., 802 W. 6th St., Cincinnati, O.
Stanley Mfg. Co., 108 Summer St., Boston, Mass.
Stimpson, Edwin B., & Son, 31 Spruce St., New York.
Tower & Lyon, 95 Chambers St., New York.
Tubular Rivet & Stud Co., Boston, Mass.
Winkler, Fred, Newark, N. J.

89 HAT MACHINERY.

Bulasky, L., 173 Prince St., New York.
Cuming, M. A., & Co., 43 Bleecker St., New York.
Doran Bros., Danbury, Conn.
Durbrow & Hearne Mfg. Co., 12 Wooster St., New York.
Morlock & Husk, Danbury, Conn.
New Machine Co., Danbury, Conn.
Singer Mfg. Co., 569 Broadway, New York.
Turner Machine Co., Danbury, Conn.
Wheeler & Wilson Mfg. Co., Bridgeport, Conn.

90 ACCESSORIES. Hat Molds, Blocks, Hat Brim Irons, etc.

Boston Belting Co., 256 Devonshire St., Boston, Mass.
Chalfant Mfg. Co., Altgen, Pa.

91 HONEY MAKING APPLIANCES.

Root, A. I., Co., Medina, O.

92 ICE AND REFRIGERATING MACHINERY.

Ammonia Purifiers and Condensers, Brine Coolers, etc.

American Linde Refrigeration Co., 120 Liberty St., New York.
Arctic Machine Co., Canton, O.
Brown-Cochran Co., Lorain, O.
Buffalo Refrigerating Machine Co., Harrison, N. J.
Brunswick Refrigerating Co., New Brunswick, N. J.
Carbondale Machine Co., Carbondale, Pa.
Columbus Iron Works Co., Columbus, Ga.
Challoner Co., Oshkosh, Wis.
Creamery Package Mfg. Co., 180 Kinzie St., Chicago, Ill.
De LaVergne Ref. Machine Co., Ft. of East 138th St., New York.
Dernell, H. F., & Co., Athens, N. Y.
Featherstone Foundry & Machine Co., 348 N. Halsted St., Chicago, Ill.
Frank, Ernest T., 642 West Pratt St., Baltimore, Md.
Frick Co., Waynesboro, Franklin Co., Pa.
Great Lakes Engineering Works, Detroit, Mich.
Harris Ice Machine Co., Portland, Ore.

ICE AND REFRIGERATING MACHINERY, continued

Healy Ice Machine Co., 30th and Wallace Sts., Chicago, Ill.
Herbert Mfg. Co., 130 Broadway, New York.
Huettman & Cramer Co., Detroit, Mich.
Ice and Cold Machine Co., St. Louis, Mo.
Isbell-Porter Co., Newark, N. J.
Kroeschell Bros. Ice Machine Co., 29-39 Erie St., Chicago, Ill.
Larsen Ice Machine Co., Omaha, Neb.
MacDonald, C. A., 301 Monadnock Blk., Chicago, Ill.
Maynard, J. F., 116 Geyer Ave., St. Louis, Mo.
Memphis Machine Works, Memphis, Tenn.
Metzger, J., Mfg. Co., 2165 McLean Ave., Cincinnati, O.
Newburgh Ice Machine & Engine Co., Newburgh, N. Y.
Patten Vacuum Ice Co., Ltd., 45 Broadway, N. Y.
Pennsylvania Iron Works Co., 50th St. & Lancaster Ave., Philadelphia, Pa.
Rebsamen & Almeroth, 89-91 Indiana St., Chicago, Ill.
Riverside Iron Works Co., Kansas City, Mo.
Remington Machine Co., Wilmington, Del.
Roelker, H. B., 41 Maiden Lane, New York.
Schmidt-Russell Mfg. Co., 57 McCullough Bldg., Davenport, Ia.
Triumph Ice Machine Co., Cincinnati, O.
United Iron Works Co., Springfield, Mo.
United Iron Works, Oakland, Cal.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt, Henry, Machine Co., Louisville, Ky.
Voorhees, Gardner T., 53 State St., Boston, Mass.
Voss Ice Machine Works, 242-252 E. 122d St., New York.
Vulcan Iron Works, San Francisco, Cal.
Wegner Machine Co., Buffalo, N. Y.
White, A. S., 5917 Normal Ave., Chicago, Ill.
Wildman Boiler Works, 1274-1280 W. 12th St., Chicago, Ill.
Wolf, Fred W., Co., 39 Rees St., Chicago, Ill.
York Manufacturing Co., York, Pa.

93 LABELING MACHINES.

Atlantic Machine Works, Westminster, Md.
Burt Machine Co., Baltimore, Md.
Knapp, Fred. H., Co., 80 Wabash Ave., Chicago, Ill.
Kramer Bros., Dayton, O.
Leffler, Charles, & Co., 61 Clymer St., Brooklyn, N. Y.
New York Labeling Machine Co., 407 Broome St., New York.

94. SHADE ROLLER.

Atlantic Machine Works, Westminster, Md.

95 LAUNDRY MACHINERY.

Dampeners, Centrifugal Wringers, Starch Extractors, Body, Sleeve, etc., Ironers; Mangles, Cylinder Washing Machines, Clothes Tumblers, Starch Cookers, Starching Machines, Wringers, etc.

Adams Laundry Mchy Co., 1931 Sixth Ave., Troy, N. Y.
American Laundry Mchy. Co., Cincinnati, O.
American Wringer Co., 99 Chambers St., New York.
Antiaqua Co., 59 State St., Albany, N. Y.
Barnes & Erb Co., 3846 Lancaster Ave., Philadelphia, Pa.
Bess Machine Co., Hamilton, O.

LAUNDRY MACHINERY, continued

Bird, F. J., Co., 132 Arch St., Philadelphia, Pa.
Bishop, Geo. H., 57 Washington St., Chicago, Ill.
Castle, Wilmot Co., Rochester, N. Y.
Champion Mangle Co., Chicago, Ill.
Chicago Clothes Dryer Works, Chicago, Ill.
Chicago Rival Machine Co., 43 S. Canal St., Chicago, Ill.
Cleveland Laundry Mchy. Co., Cleveland, O.
Craw, J. W., Laundry Mchy. Co., South Norwalk, Conn.
Economic Mfg. Co., 118 Main St., East Orange, N. J.
Empire Laundry Mchy. Co., Boston, Mass.
Fritz, Geo. J., Fdry. & Machine Co., 2008 S. 3d St., St. Louis.
Grever, Edward C., & Co., Cincinnati, O.
Hagan, A. T., Co., Rochester, N. Y.
Lovewell-Henrici Co., Chelsea, Mass.
Nelson & Kreuter Co., 42 S. Clinton St., Chicago, Ill.
New York Laundry Mchy. Co., 70 W. Houston St., New York.
Oakley & Keating, 40 Cortlandt St., New York.
Poland Laundry Mchy Co., 47 Kemble St., Boston, Mass.
Reed Mfg. Co., Erie, Pa.
Sinclair, S. H., & Co., Chicago, Ill.
Troy Laundry Mchy. Co., Troy, N. Y.
United States Laundry Mchy Co., 408 E. 2d St., Cincinnati, O.
Warren Electric Mfg. Co., Sandusky, O.
Watkins Laundry Mchy. Co., Cincinnati, O.
Wheeler, G. B., Bellows Falls, Vt.
Wilson Laundry Mchy. Co., Columbia, Pa.
Windsor Locks Machine Co., Windsor Locks, Conn.

96 LEATHER WORKING MACHINERY.

97 CURRIERS' MACHINERY. Whitening, Stoning, Scouring, Brushing, Dusting-off, Buffing, Splitting and Embossing Machines; Sole Leather Rolling Machines, Coloring Machines, etc.

Baker, G. W., & Co., Wilmington, Del.
Carley Heater Co., Olean, N. Y.
Emrich, Philip, 824 Main St., Cincinnati, O.
Evans', John, Sons, 13th and Buttonwood Sts., Philadelphia.
Freeman, J. T., & Co., Woburn, Mass.
Hide & Leather Working Machine Co., Milwaukee, Wis.
Holmes, Chas., Machine Co., 299 Marginal St., E. Boston, Mass.
Horn, Wm., & Bro., 451 North 3d St., Philadelphia, Pa.
Martin, W. F., Salem, Mass.
Melius-Steele Machine Works, Inc., Gloversville, N. Y.
Moore Leather Machinery Co., Salem, Mass.
Vaughn Machine Co., Peabody, Mass.
Whitney Machine Co., Winchester, Mass.

98 ACCESSORIES. Morocco Tools, Clearing Stones, Skin Softeners, Fiddling Stones, Graining Boards, Whitening Slickers, etc.

Baker, G. W., & Co., Wilmington, Del.
Emrich, Philip, 824 Main St., Cincinnati, O.
Ellis, George D., & Sons Co., 229 Vine St., Philadelphia, Pa.
Hide & Leather Working Machine Co., Milwaukee, Wis.
Horn, William, & Bro., 451 North 3d St. Philadelphia, Pa.
Jones, A. W., Peabody, Mass.
Vaughn Machine Co., Peabody, Mass.

LEATHER WORKING MACHINERY, continued

99 **TANNERS' MACHINERY. Bark Mills, Bark Cutters, Liquor Logs, Seasoning Machines, Measuring Machines, Head Splitters, Stuffing Mills, Liquor Heaters, Hair Washers, Stamping Machines, Unhairing Machines, Tan Presses, Leather Presses, Stuffing Wheels, Fleshing Machines, Working Out Machines, etc.**

Baker, G. W., & Co., Wilmington, Del.
Brooks, E. D., & Co., 100 High St., Boston, Mass.
Carley Heater Co. Olean, N. Y.
Du Bois Iron Works, Du Bois, Pa.
Emrich, Philip, 824 Main St., Cincinnati, O.
Eureka Bark Mill Co., 333 E. Fulton St., Lancaster, Pa.
Faust Machine Works, 113-115 Eighth St., Brooklyn, N. Y.
Hemingway Machine Co., Lynn, Mass.
Hide & Leather Working Machine Co., Milwaukee, Wis.
Holmes, Chas., Machine Co., 299 Marginal St., E. Boston, Mass.
Horn, Wm., & Bro., 451 No. 3d St., Philadelphia, Pa.
Martin, W. F., Salem, Mass.
Moore Leather Machinery Co., Salem, Mass.
Mosser, W. F., & Son, Allentown, Pa.
Munkwitz, E. H., Milwaukee, Wis.
Nightingale, J. E., Danvers, Mass.
Otts Bark Shaving Mill Co., La Crosse, Wis.
Quirin Leather Press Co., Olean, N. Y.
Scott Leather Machine Co., Beverly, Mass.
Sears, J. H., Co., Boston, Mass.
Slocomb, F. F., & Co., Wilmington, Del.
Smith's, John E., Sons Co., Buffalo, N. Y.
Stehling, Chas. H., Milwaukee, Wis.
Sturtevant, B. F., Co., Jamaica Plain, Mass.
Union Leather Measuring Machine Co., Danversport, Mass.
Vaughn Machine Co., Peabody, Mass.
Wellman Sole Cutting Mch. Co., Medford, Mass.
Whitney Machine Co., Winchester, Mass.
Wood's, G. R., Sons, Sheffield, Warren Co., Pa.
Wyckoff & Son Co., Elmira, N. Y.

100 **ACCESSORIES. Tallow Testers, Sheep Shears, Hairing Knives, Workers, Leather Splitting Horses, etc.**

Baker, G. W., & Co., Wilmington, Del.
Emrich, Philip, 824 Main St., Cincinnati, O.
Eliis, Geo. D., & Sons Co., 229 Vine St., Philadelphia, Pa.
Hide & Leather Working Machine Co., Milwaukee, Wis.
Sheffield Wooden Pipe Works, Sheffield, Warren Co., Pa.
Vaughn Machine Co., Peabody, Mass.

101 LETTER CANCELLING MACHINES.

International Postal Supply Co., 150 Nassau St., New York.

102 MACARONI MACHINERY.

Mixers, Presses, Kneaders, Cutters, etc.

Cavagnaro, John J., 215 Centre St., New York.
City Machine Co., 25-31 Michigan Ave., Cleveland, O.
Clough & Witt Machine Co., Leonard & Winter Sts., Cleveland, O.
Day, J. H., Co., Harrison Ave. & Bogen St., Cincinnati, O.
De Beauvais, J., 155th St. & Elton Ave., New York.

MACARONI MACHINERY, continued

Elmes, Chas. F., Engineering Works, Morgan & Fulton Sts., Chicago. Ill.
Howard Fdry. & Machine Co., Lansdowne, Pa.
Walton, P. M., 1023-1025 Germantown Ave., Philadelphia, Pa.
Wirtz, A., & Co., 87 Nassau St., New York.

103 MAIL HANDLING MACHINES.

Smith Railway Mail Service Co., Rochester, N. Y.

104 MARINE MACHINERY.

Steam Tillers, Capstans, Telemotors, Towing Hooks, Steering Gear, etc.

American Ship Windlass Co., Providence, R. I.
Bell, David, Engineering Works, Buffalo, N. Y.
Case, A. Wells, & Son, Highland Park, Conn.
Chase Machine Co., Cleveland, O.
Columbia Engineering Works, 10th and Johnson Sts., Portland, Ore.
Dake Engine Co., Grand Haven, Mich.
Edson Mfg. Co., 255-257 Atlantic Ave., Boston, Mass.
Great Lakes Engineering Works, Detroit, Mich.
Hyde Windlass Co., Bath, Me.
Marine Hardware Co., Peabody, Mass.
Northwestern Iron Works, Seattle, Wash.
MacKinnon Mfg. Co., 218-230 N. Water St., Bay City, Mich.
Marine Iron Works, Clybourn and Southport Aves., Chicago.
Marine Mfg. & Supply Co., 158 South St., New York.
Paine, James H., & Son, Noank, Conn.
Risdon Iron and Locomotive Works, San Francisco, Cal.
Sheriffs Mfg. Co., S. Water and Barclay Sts., Milwaukee, Wis.
Slocum, Geo. S., 32 Prospect Hill St., Newport, R. I.
Sound Iron Works, Everett, Wash.
Superior Iron Works, Cor. Grand Ave. and N. 3d St., Superior, Wis.
Toquet Launch & Motor Co., Saugatuck, Conn.
Truscott Boat Mfg. Co., St. Joseph, Mich.
Willamette Iron & Steel Works, Portland, Ore.

105 MATCH MACHINERY.

Diamond Match Co., 27 William St., New York.
Donnelly, Joseph C., 427 N. 13th St., Philadelphia, Pa.
Herrick & Cowell, New Haven, Conn.
Murphy, F. W., & Co., Ashland Blk., Chicago, Ill.

106 MATTRESS MACHINERY.

United Mattress Machinery Co., 17 Milk St., Boston, Mass.

107 METERS.

108 GAS.

American Meter Co., 561 W. 47th St., New York.
Detroit Meter Co., Detroit, Mich.
Equitable Meter Co., 226 First Ave., Pittsburg, Pa.
Griffin, John J., & Co., 1513 Race St., Philadelphia, Pa.

METERS, GAS, continued

Helme & McIlhenny, 1339 Cherry St., Philadelphia, Pa.
Hersey Mfg. Co., South Boston, Mass.
Keystone Meter Co., Royersford, Pa.
McDonald, D., & Co., Albany, N. Y.
Maryland Meter & Mfg. Co., Baltimore, Md.
National Meter Co., 84 Chambers St., New York.
New Haven Novelty Machine Co., New Haven, Conn.
Pacific Meter Co., 17 Tremont St., San Francisco, Cal.
Pittsburg Supply Co., Pittsburg, Pa.
Tufts, Nathaniel, Meter Co., Boston, Mass.

109 OIL.

Buffalo Meter Co., 290 Terrace, Buffalo, N. Y.
Hersey Mfg. Co., South Boston, Mass.
Worthington, Henry R., 114 Liberty St., New York.

110 STEAM.

American District Steam Co., Lockport, N. Y.
St. John, G. C., 143 Liberty St., New York.

111 WATER.

American Valve & Meter Co., Cincinnati, O.
Buffalo Meter Co., 290 Terrace, Buffalo, N. Y.
Builders' Iron Foundry, Providence, R. I.
Hersey Mfg. Co., South Boston, Mass.
National Meter Co., 84 Chambers St., New York.
Neptune Meter Co., Park Row Bldg., New York.
Pittsburg Meter Co., East Pittsburg, Pa.
San Francisco Tool Works, San Francisco, Cal.
Sangamo Electric Co., Springfield, Ill.
Schaeffer & Budenburg Mfg. Co., St. Edwards & Bedford Sts., Brooklyn, N. Y.
Standard Water Meter Co., 521 W. 45th St., New York.
Thomson Meter Co., 79 Washington St., Brooklyn, N. Y.
Union Water Meter Co., Worcester, Mass.
Worthington, Henry R., 114 Liberty St., New York.

112 MILK CONDENSING APPARATUS.

Rogers, R. R., Winthrop, Me.

113 MOTOR VEHICLES.

114 COMMERCIAL VEHICLES.

Ajax Motor Vehicle Co., 220 W. 36th St., New York.
Brazier, H. Bartol, 1811 Fitzwater St., Philadelphia, Pa.
Brecht Automobile Co., 12th St. & Cass Ave., St. Louis, Mo.
Clark, Edward S., 272 Freeport St., Boston, Mass.
Conrad Motor Carriage Co., 1413 Niagara St., Buffalo, N. Y.
Daimler Mfg. Co., 939 Steinway Ave., Long Island City, N. Y.
Electric Vehicle Co., Hartford, Conn.
Fisher Motor Vehicle Co., 1311 Hudson St., Hoboken, N. J.
Four-Wheel Drive Wagon Co., Milwaukee, Wis.
Gibbs Engineering & Mfg. Co., Glendale, L. I.
Grout Bros., Orange, Mass.
International Motor Car Co., Toledo, O.

COMMERCIAL MOTOR VEHICLES, continued

Locomobile Co. of America, Seaside Park, Bridgeport, Conn.
Roberts, O. G., & Co., 152 N. 9th St., Columbus, O.
Standard Motor Construction Co., Jersey City, N. J.
Stearns Steam Carriage Co., 502 E. Water St., Syracuse, N. Y.
Thornycroft Steam Wagon Co., Paterson, N. J.
Tractor Co., 3d and Trumbull Sts., Elizabethport, N. J.
Union Motor Truck Co., Philadelphia, Pa.
Universal Automobile Co., 129 1st St., San Francisco, Cal.
Upton Machine Co., Beverley, Mass.
White Sewing Machine Co., Rose Bldg., Cleveland, O.
Woods Motor Vehicle Co., 110-112 E. 20th St., Chicago, Ill.

115 MOTOR CYCLES.

American Cycle Mfg. Co., Hartford, Conn.
Armac Motor Cycle Mfg. Co., St. Paul, Minn.
Bradley, C. E., Motor Co., 268 Diamond St., Philadelphia, Pa.
Buckeye Motor Co., 201 S. High St., Columbus, O.
California Motor Co., 2212 Folsom St., San Francisco, Cal.
Coleman, H. P., 46 Hancock St., Boston, Mass.
Consolidated Mfg. Co., Toledo, O.
Curtiss, G. H., Mfg. Co., Hammondsport, N. Y.
Driver, Walter, 700 W. Lehigh Ave., Philadelphia, Pa.
Dusenberg, A. S., Garner, Iowa.
Fowler-Manson-Sherman Cycle Mfg. Co., 241 S. Jefferson St., Chicago, Ill.
Graves Motor Mfg. Co., St. Paul, Minn.
Great Western Mfg. Co., La Porte, Ind.
Hendee Mfg. Co., 216 Worthington St., Springfield, Mass.
Holley Motor Co., Bradford, Pa.
Lamson Machine Co., Central Ave., Abington, Mass.
Light Mfg. & Foundry Co., Pottstown, Pa.
Mayo Damper Co., 355 Walnut St., Pottstown, Pa.
Merkel Mfg. Co., 1095 26th Ave., Milwaukee, Wis.
Metz, C. H., Waltham, Mass.
Mitchell Motor Car Co., 21 Packard Ave., Racine, Wis.
Motor Cycle Mfg. Co., Brockton, Mass.
Parkin, J. W., & Son, 2413 N. Broad St., Philadelphia, Pa.
Pioneer Motor Cycle Co., 290 Grove St., Jersey City, N. J.
Pope Mfg. Co., 21 Park Row, New York.
Razoux, Charles L., 446 Tremont St., Boston, Mass.
Reading Standard Cycle Mfg. Co., Reading, Pa.
Reeser & MacKenzie, Philadelphia, Pa.
Reliance Motorcycle Co., Addison, N. Y.
Steffey Mfg. Co., 2722 Brown St., Philadelphia, Pa.
Sylvester & Jones, Broad St., E. Weymouth, Mass.
Thomas, E. R., Motor Co., Inc., 1190 Niagara St., Buffalo, N. Y.
Tourist Motor Co., 97 Halsey St., Newark, N. J.
Wagner Cycle Co., 41 W. 4th St., St. Paul, Minn.
Waltham Mfg. Co., Waltham, Mass.
Warwick Cycle & Auto Co., Springfield, Mass.
Whipple Cycle Co., 260 W. Jackson Boulevard, Chicago, Ill.
Williamson, Thos. G., 8 S. 39th St., Philadelphia, Pa.
Wisconsin Wheel Works, Racine Junction, Wis.

116 TOURING CARS, PLEASURE VEHICLES, ETC.

117 ELECTRIC.

Ajax Motor Vehicle Co., 220 W. 36th St., New York.

ELECTRIC MOTOR VEHICLES, continued

Baker Motor Vehicle Co., Central Ave. & C. & P. R. R., Cleveland, O.
Brecht Automobile Co., 12th St. & Cass Ave., St. Louis, Mo.
Buffalo Electric Carriage Co., Buffalo, N. Y.
Centaur Motor Vehicle Co., 59 Franklin St., Buffalo, N. Y.
Century Motor Vehicle Co., Syracuse, N. Y.
Clark, A. F., & Co., 2130 W. Susquehanna Ave., Philadelphia.
Electric Vehicle Co., Hartford, Conn.
International Motor Car Co., Toledo, O.
National Motor Vehicle Co., 2100 E. 22d St., Indianapolis, Ind.
Studebaker Bros. Mfg. Co., South Bend, Ind.
Winton Motor Carriage Co., Belden & Mason Sts., Cleveland, O.
Wood Motor Vehicle Co., 110 E. 20th St., Chicago, Ill.

118 GASOLINE.

Acme Motor Car Co., 8th & Elm Sts., Reading, Pa.
American Darracq Auto Co., 652 Hudson St., New York.
American Motor Carriage Co., 514 E. Prospect St., Cleveland.
Apperson Bros. Automobile Co., Kokomo, Ind.
Auburn Automobile Co., Auburn, Ind.
Austin & Son, Grand Rapids, Mich.
Autocar Co., Ardmore, Pa.
Automotor Co., 236 Main St., Springfield, Mass.
Baldner Motor Vehicle Co., Xenia, O.
Bartholomew Co., 117 Fredonia Ave., Peoria, Ill.
Berg Automobile Co., 100 Broadway, New York.
Bonton Automobile Co., Rumford Falls, Me.
Brazier, H. Bartol, 1811 Fitzwater St., Philadelphia, Pa.
Bristol Motor Car Co., Plainville, Conn.
Buckmobile Co., 708 Genesee St., Utica, N. Y.
Cadillac Automobile Co., 1343 Cass Ave., Detroit, Mich.
Cameron Automobile Co., Pawtucket, R. I.
Centaur Motor Vehicle Co., 59 Franklin St., Buffalo, N. Y.
Century Motor Vehicle Co., 517 E. Water St., Syracuse, N. Y.
Chelsea Mfg. Co., Chelsea, Mich.
Chicago Moto Cycle Co., 536 Wabash Ave., Chicago, Ill.
Church Mfg. Co., Adrian, Mich.
Clark Mfg. Co., Moline, Ill.
Clarkmobile Co., Lansing, Mich.
Cleaver Motor Vehicle Co., Fond du Lac, Wis.
Cleveland Automobile Co., 16 Lake St., Cleveland, O.
Columbus Motor Vehicle Co., Columbus, O.
Conrad Motor Carriage Co., 1411 Niagara St., Buffalo, N. Y.
Corbin Motor Vehicle Corporation, New Britain, Conn.
Covert Motor Vehicle Co., Lockport, N. Y.
Crest Mfg. Co., 83 Portland St., Cambridge, Mass.
Dawson, J. H., Machy. Co., Chicago, Ill.
Duryea Power Co., Reading, Pa.
Electric Vehicle Co., Hartford, Conn.
Elmore Mfg. Co., Clyde, O.
Fanning Mfg. Co., Morgan, Pratt & Superior Sts., Chicago, Ill.
Flint Automobile Co., 101 Mill St., Flint, Mich.
Ford Motor Co., Detroit, Mich.
Foster Automobile Mfg. Co., Rochester, N. Y.
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
Fredonia Mfg. Co., Youngstown, O.
Friedman Auto Co., 1 Van Buren St., Chicago, Ill.

GASOLINE MOTOR VEHICLES, continued

General Auto & Mfg. Co., 1312 Hamilton St., Cleveland, O.
Grout Bros. Automobile Co., Orange, Mass.
Hall Motor Vehicle Co., Dover, N. J.
Hansen Car Co., Cleveland, O.
Haynes-Apperson Co., Kokomo, Ind.
Holsman Auto Co., 153 La Salle St., Chicago, Ill.
International Motor Car Co., Toledo, O.
Jackson Automobile Co., Jackson, Mich.
Jeffery, Thos. B., Kenosha, Wis.
Jones-Corbin Co., 304 N. Broad St., Philadelphia, Pa.
Kensington Auto Mfg. Co., Northumberland Ave., Buffalo, N. Y.
Kirk Mfg. Co., Toledo, O.
Kirk-Latty Mfg. Co., Cleveland, O.
Knox Automobile Co., 40 Waltham Ave., Springfield, Mass.
La France Automobile Co., Elmira, N. Y.
Locomobile Co. of America, Seaside Park, Bridgeport, Conn.
Loomis Automobile Co., 7 Birge Ave., Westfield, Mass.
Lyman & Burnham, 70 Kilby St., Boston, Mass.
Mackle-Thompson Automobile Co., Elizabeth, N. J.
Marble-Swift Auto Co., 29½ Aldine Sq., Chicago, Ill.
Marr, W. L., Auto Car Co., Detroit, Mich.
Matheson Motor Car Co., Ltd., Grand Rapids, Mich.
Mead Cycle Co., Chicago, Ill.
Mercury Machine Co., 1328 Olive St., Philadelphia, Pa.
Michigan Automobile Co., Ltd., Kalamazoo, Mich.
Milwaukee Motor & Mfg. Co., Milwaukee, Wis.
Mitchell Motor Car Co., Racine Junction, Wis.
Model Gas & Gasoline Engine Co., Auburn, Ind.
Mohawk Cycle Co., Indianapolis, Ind.
Morlock Automobile Mfg. Co., 63 Chandler St., Buffalo, N. Y.
Motor Storage & Repair Co., Chillicothe, O.
Moyea Automobile Co., 3 W. 29th St., New York.
National Automobile & Motor Co., Milwaukee, Wis.
National Motor Vehicle Co., Indianapolis, Ind.
National Sewing Machine Co., Belvidere, Ill.
Northern Mfg. Co., Detroit, Mich.
Northwestern Furniture Co., Milwaukee, Wis.
O. K. Machine Works, 75 Ellicott St., Buffalo, N. Y.
Olds Motor Works, 1308 Jefferson St., Detroit, Mich.
Packard Motor Car Co., Warren, O.
Pan-American Motor Co., Mamaroneck, N. Y.
Peerless Motor Car Co., Lisbon St., Cleveland, O.
Phelps Automobile Co., Stoneham, Mass.
Pierce, George N., Co., 6 Hanover St., Buffalo, N. Y.
Pope-Robinson Co., Hyde Park, Mass.
Premier Motor Mfg. Co., Indianapolis, Ind.
Radford Automobile Co., 45 Columbus Ave., Boston, Mass.
Rapid Motor Car Co., Grand Rapids, Mich.
Reber Mfg. Co., 8th & Elm Sts., Reading, Pa.
Reid Mfg. Co., Detroit, Mich.
Remington Automobile & Motor Co., Utica, N. Y.
Rockaway Automobile Co., Rockaway, N. J.
Rotary Motor Vehicle Co., 43 Columbus Ave., Boston, Mass.
Royal Motor Car Co., Cleveland, O.
St. Louis Motor Carriage Co., 1211 Vandeventer Ave., St. Louis.
Sandusky Automobile Co., Sandusky, O.
Searchmont Auto Co., North American Bldg., Philadelphia, Pa.

GASOLINE MOTOR VEHICLES, continued

Shelby Motor Car Co., Shelby, O.
Sintz Motor Car Co., Grand Rapids, Mich.
Speedwell Auto Co., Market & Biddle Sts., Milwaukee, Wis.
Springer Motor Vehicle Co., 242 W. 41st St., New York.
Springfield Auto Co., Springfield, O.
Standard Motor Construction Co., 172-180 Whiton St., Jersey City, N. J.
Standard Motor Vehicle Co., 183 La Salle St., Chicago, Ill.
Standard Wheel Co., 689 Ohio St., Terre Haute, Ind.
Starin Co., North Tonawanda, N. Y.
Stearns, F. B., Co., Euclid & Lake View Aves., Cleveland, O.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Thomas, E. R., Motor Co., 1192 Niagara St., Buffalo, N. Y.
Thomson Auto Co., 22d & Market Sts., Philadelphia, Pa.
Todd Mfg. Co., Toledo, O.
Torbensen Gear., Inc., Bloomfield, N. J.
Trumbull Mfg. Co., Warren, O.
Turner Automobile Co., Morrisville, Pa.
Union Auto Co., Union City, Ind.
Waltham Mfg. Co., Waltham, Mass.
Warwick Cycle & Auto Co., Quincy & Orleans Sts., Springfield, Mass.
Waterloo Motor Works, 170 Third Ave., West Waterloo, Iowa.
Wayne Auto Co., Detroit, Mich.
Whitney Automobile Co., Whitney Point, N. Y.
Wick, H. R., & Co., Youngstown, O.
Wildman Automobile Co., Morrisville, Pa.
Wilson Automobile Mfg. Co., Wilson, N. Y.
Winton Motor Carriage Co., Belden & Mason Sts., Cleveland, O.
Wisconsin Wheel Works, Racine Junction, Wis.
Woodruff Automobile Co., Akron, O.
Woods Motor Vehicle Co., 110-112 E. 20th St., Chicago, Ill.

119 STEAM.

Boss Knitting Machine Works, Elm & Reed Sts., Reading, Pa.
Brecht Auto Co., 12th St. & Cass Ave., St. Louis, Mo.
Century Motor Vehicle Co., 517 E. Water St., Syracuse, N. Y.
Clark, Edward S., 272 Freeport, St., Boston, Mass.
Conrad Motor Carriage Co., 1413 Niagara St., Buffalo, N. Y.
Cotta Automobile Co., Rockford, Ill.
Foster Auto. Mfg. Co., 297 State St., Rochester, N. Y.
Grout Bros., Orange, Mass.
Hoffman Auto. & Mfg. Co., Lake & Marquette Sts., Cleveland, O.
International Motor Car Co., Toledo, O.
Jackson Automobile Co., Jackson, Mich.
Lane Motor Vehicle Co., Poughkeepsie, N. Y.
Locomobile Co. of America, Seaside Park, Bridgeport, Conn.
Mobile Co. of America, Broadway & 54th St., New York.
Offeldt, F. W. & Sons, Brooklyn, N. Y.
Prescott Auto. Mfg. Co., 83 Chambers St., New York.
Stanley Mfg. Co., 89 Beach St., Boston, Mass.
Stanley Motor Carriage Co., Newton, Mass.
Stearns Steam Carriage Co., 502 E. Water St., Syracuse, N. Y.
White Sewing Machine Co., Cleveland, O.

120 MOVING PICTURE APPARATUS.

American Mutoscope & Biograph Co., 11 E. 14th St., New York.

MOVING PICTURE APPARATUS, continued

Chicago Recording Scale Co., Wauhegan, Ill.
Kleine Optical Co., 52 State St., Chicago, Ill.
McAllister, T. H., 49 Nassau St., New York.

121 OIL MILL MACHINERY.

Linters, Hullers, Separators, Crushers, Cookers, Presses, Cake Formers, etc.

American Engineering Co., Springfield, O.
Brown Cotton Gin Co., New London, Conn.
Buckeye Iron & Brass Works, Dayton, O.
Bushnell, George H., Press Co., Thompsonville, Conn.
Callahan, W. P., & Co., Dayton, O.
Carbondale Machine Co., Carbondale, Pa.
Cardwell Machine Co., Richmond, Va.
Chickasaw Iron Works, Memphis, Tenn.
Elmes, Charles F., Engineering Works, Morgan & Fulton Sts., Chicago, Ill.
Hardie-Tynes Foundry & Machine Co., Birmingham, Ala.
Howes, S., Co., Silver Creek, N. Y.
Lombard Iron Works & Supply Co., Augusta, Ga.
Sprout, Waldron & Co., Muncy, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Taylor & Co., Inc., 415 Driggs Ave., Brooklyn, N. Y.
Tompkins, D. A., Co., Charlotte, N. C.
Van Winkle, E., Gin & Machine Works, Atlanta, Ga.

122 LINSEED OIL MACHINERY.

Buckeye Iron & Brass Works, Dayton, O.
Bushnell, G. H., Press Co., Thompsonville, Conn.

123 OPTICIANS' TOOLS AND APPLIANCES.

Retinoscopes, Ophthalmoscopes, Phorometers, Perimeters, Lens Drills, Lens Cutters, Grind Stones, etc.

American Optical Co., Southbridge, Mass.
Bausch & Lomb Optical Co., Rochester, N. Y.
Enterprise Optical Mfg. Co., 154 Lake St., Chicago, Ill.
Geneva Optical Co., 63 Washington St., Chicago, Ill.
Gurley, W., & L. E., Troy, N. Y.
Hardinge Bros., 1034 Lincoln Ave., Chicago, Ill.
Hardy, F. A., & Co., 131 Wabash Ave., Chicago, Ill.
Johnston, J. M. & A. C., Co., 84 Wabash Ave., Chicago, Ill.
Johnston Optical Co., Detroit, Mich.
King, Julius, Optical Co., 126 State St., Chicago, Ill.
Langelier Mfg. Co., Providence, R. I. *See adv. page 39.*
McIntosh Battery & Optical Co., 521 Wabash Ave., Chicago, Ill.
New York Mutual Optical Co. 9-13 Maiden Lane, New York.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Smith, F. H., Mfg. Co., 18 W. Randolph St., Chicago, Ill.
Spencer Optical Mfg. Co., 15 Maiden Lane, New York.
Wagner, Anton, 1034 W. Girard Ave., Philadelphia, Pa.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa.

124 PAINT BURNERS.

Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.

PAINT BURNERS, continued

Clayton & Lambert Mfg. Co., Detroit, Mich.
Hull, M. L., 24 Broadway, Cleveland, O.
Macleod, Walter, & Co., Cincinnati, O.
Schneider & Trenkamp Co., Cleveland, O.
Turner Brass Works, Franklin & Michigan Sts., Chicago, Ill.
Union Heater Supply Co., Detroit, Mich.
White Mfg. Co., 194 Michigan St., Chicago, Ill.

125 PAINT MIXING MACHINERY

Mills, Chasers, Mixers, Color Grinders, Coolers, Bolters, Dissolvers, Extractors, Aerators, Disintegrators, Heaters, Triturators, etc.

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bartlett, C. O., & Snow Co., French & Winter Sts., Cleveland.
Campbell, P. F., 55 Laurel St., Philadelphia, Pa.
Day, J. H., Co , Harrison Ave. & Bogen St., Cincinnati, O.
Dunning, W. D., Syracuse, N. Y.
Faust Machine Works, 113 Eighth St., Brooklyn, N. Y.
Garry Iron & Steel Co., Cleveland, O.
Joslin, Schmidt & Co., Cincinnati, O.
Kaestner & Co., 241 S. Jefferson St., Chicago, Ill.
Kent Machine Wks., 246 Plymouth St., Brooklyn, N. Y.
Raymond Bros. Impact Pulverizer Co., 143 Laflin St., Chicago.
Ross, Chas., & Son Co., 16 Steuben St., Brooklyn, N. Y.
Simpson, J. S. & G. F. 26 Rodney St., Brooklyn, N. Y.
Stevenson Co., Wellsville, O.
Walton, P. M., 1025 Germantown Ave., Philadelphia, Pa.
Waterville Foundry & Manufacturing Co., Waterville, N. Y.

126 PAINT SPRAYING MACHINES.

Acorn Brass Mfg. Co., 51 N. Peoria St., Chicago, Ill.
Baird Portable Machine Co., Topeka, Kan.
Bastian, Chas. L., Mfg. Co., 76 Illinois St., Chicago, Ill.
Chicago Pneumatic Tool Co., Fisher Bldg., Chicago, Ill.
De Ronde, Frank S., Co., 46 Cliff St., New York.
Eureka Pneumatic Spray Co., 556 W. 27th St., New York.
Garry Iron & Steel Co., Cleveland, O.
Hook-Hardie Co., Hudson, Mich.
Humphryes Mfg. Co., Mansfield, O.
MacLeod, Walter, & Co., 436 E. Front St., Cincinnati, O.
Muralo Co., New Brighton, S. I., N. Y.
Patton Paint Co., Milwaukee, Wis.
Standard Railway Equipment Co., St. Louis, Mo.
Star Brass Works Co., 152 E. Lake St., Chicago, Ill.
United States Pump & Supply Co., Toledo, O.
U. S. A. Pneumatic Tool Co., Topeka, Kan.

127 PHARMACEUTICAL MACHINERY.

Tablet Machines, Pill Compressors, Drug Mills, Capsule Fillers, Drug Chasers, Triturators, Pill Mass Mixers, Revolving Steam Pans, Pill Coating Machines, Emulsifiers, Percolators, Powder Dividers, etc.

Abbe Engineering Co., 220 Broadway, New York.
Allen, A., & Co., 19th and Bainbridge Sts., Philadelphia, Pa.

PHARMACEUTICAL MACHINERY, continued

American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bushnell, G. H., Co., Thompsonville, Conn.
Chavant, C. H., & Co., Rutgers & McAdoo Aves., Jersey City.
Colton Arthur, Brush & Macomb Sts., Detroit, Mich.
Day, J. H., Co., Harrison Ave. & Bogen St., Cincinnati, O.
Eastman, L. K., 1351 Woodward Ave., Detroit, Mich.
Enterprise Mfg. Co., Philadelphia, Pa.
Faust Machine Works, 113 Eighth St., Brooklyn, N. Y.
Fox, Fultz & Co., 31 Warren St., New York.
Raymond Bros. Impact Pulverizer Co., 143 Laflin St., Chicago.
Ross., Chas., & Son Co., 16 Steuben St., Brooklyn, N. Y.
Schultz, O'Neil, Machine Co., Minneapolis, Minn.
Stokes, F. J., Machine Co., 9th & Thompson Sts., Philadelphia, Pa.
Straub, A. W., & Co., Philadelphia, Pa.
Walton, P. M., 1025 Germantown Ave., Philadelphia, Pa.
Wirz, A. H., 913 Cherry St., Philadelphia, Pa.

128 PHOTOGRAPH MACHINES.

National Photograph Machine Co., 85 Beaver St., New York.
Rosenfield Mfg. Co., 587 Hudson St., New York.
United States Automatic Photo Co., 13-21 Park Row, New York.
Vive Camera Co., Western Springs, Ill.

129 PIANO ACTION MACHINERY.

Lever Wire Drawing Machines, Tape Cutters, Piano Key Jointers, Ivory Butting Machines, Organ Reed Board Machines, etc.

Bullock, O. S., Machine Co., Cambridgeport, Mass.
Cavagnaro, John J., 215 Centre St., New York.
Erlander, Julius, 172 Centre St., New York.
Pryibil, P., 512 West 41st St., New York.

130 PILE DRIVING MACHINERY.

Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Industrial Works, Bay City, Mich.
Mundy, J. S., Newark, N. J.
Rawson & Morrison Mfg. Co., Cambridgeport, Mass.
Toledo Foundry & Machine Co., Toledo, O.
Vulcan Iron Works, 80 N. Clinton St., Chicago, Ill.

131 POTTERY MACHINERY.

Pug Mills, Glaze and Color Grinders, Jollys, Pebble Cylinder Mills, Pottery Printing Presses, Decorating Whirlers, Bench Whirlers Chasers, Agitators, etc.

Adamson, A., Akron, O.
American Clay Working Machinery Co., Bucyrus, O.
Bonnot Co., Canton, O.
Centre Foundry Co., Wheeling, W. Va.
Crossley Mfg. Co., Trenton, N. J.
Mackenzie, Duncan, & Sons, Trenton, N. J.
Raymond, C. W., & Co., Dayton, O.

POTTERY MACHINERY, continued

Rockwood Mfg. Co., Indianapolis, Ind.
Taplin, Rice & Co., Akron, O.
Thropp, John E., & Sons Co., Trenton, N. J.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
Watson, John, Fair & Factory Sts., Trenton, N. J.
Williams Foundry & Machine Co., Akron, O.

132 PRESSES.

133 BALING.

Admiral Hay Press Co., Kansas City, Mo.
Alamo Iron Works, San Antonio, Tex.
Ann Arbor Machine Co., Ann Arbor, Mich.
Babcock Mfg. Co., Leonardsville, N. Y.
Beery Mfg. Co., Upper Sandusky, O.
Benicia Agricultural Works, San Francisco, Cal.
Boomer & Boschert Press Co., Syracuse, N. Y.
Bradley, David, Mfg. Co., Bradley, Ill.
Bullard, Walter, Chico, Cal.
Bushnell, George H., Press Co., Thompsonville, Conn.
Cardwell Machine Co., Richmond, Va.
Castree & Son, Owosso, Mich.
Chattanooga Implement & Mfg. Co., Chattanooga, Tenn.
Collins, F. F., Mfg. Co., San Antonio, Tex.
Collins Plow Co., Quincy, Ill.
Colton, G. D., & Co., Galesburg, Ill.
Copeland, Henry, Chattanooga, Tenn.
Dain Mfg. Co., Ottumwa, Iowa.
Dedrick's, P. K., Sons, Albany, N. Y.
DeLoach Mill Mfg. Co., Atlanta, Ga.
Debbis, John, & Co., Lowell, Mass.
Eagle Mfg. Co., Kansas City, Mo.
Eclipse Hay Press Co., Kansas City, Mo.
Erhart, Chris., 1237 W. 6th St., Cincinnati, O.
Ertel, George, Co., Quincy, Ill.
Famous Mfg. Co., East Chicago, Ind.
Farm Tool Mfg. Co., Carrollton, Mo.
Farquhar, A. B., & Co., Ltd., York, Pa.
Flint & Walling Mfg. Co., Kendallville, Ind.
Hendricks, D. B., & Co., Kingston, N. Y.
Hobson & Co., 17 State St., New York.
Hyde, Charles J., Meridian, Miss.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
Kansas City Hay Press Co., Kansas City, Mo.
Keystone Mfg. Co., Sterling, Ill.
Kinnard-Haines Co., Minneapolis, Minn.
Kline, Lewis T., Alpena, Mich.
Lombard Iron Works & Supply Co., Augusta, Ga.
Martin Machine Works, Meridian, Miss.
Maurer, F. X., Co., Spencer, Iowa.
Morehouse, L. C., San Leandro, Cal.
New Winona Mfg. Co., Winona, Minn.
New York Agricultural Co., 51 Cliff St., New York.
Port Huron Engine & Thresher Co., Port Huron, Mich.
Porter, J. E., Co., Ottawa, Ill.
Reese, Fred W., Paris, Ill.
Robinson & Co., Richmond, Ind.

PRESSES, BALING, continued

Rumely, M., Co., La Porte, Ind.
Sandwich Mfg. Co., Sandwich, Ill.
Scott Hay Press Co., Kansas City, Mo.
Sikes Bros. & Co., Helena, Ga.
Sinclair-Scott Co., Baltimore, Md.
Smith & Sons Mfg. Co., Kansas City, Mo.
Spencer, J. A., Dwight, Ill.
Staubach, Baldwin, 652 E. 12th St., New York.
Strait, H. N., Mfg. Co., Kansas City, Kan.
Sullivan Machy. Co., 135 Adams St., Chicago, Ill.
Thomas-Albright Co., Goshen, Ind.
Waterville Foundry & Mfg. Co., Waterville, N. Y.
Watson-Stillman Co., 204 E. 43d St., New York.
Watt Plow Co., Richmond, Va.
Whitehurst, R. W., Co., Norfolk, Va.
Whitman Agricultural Co., St. Louis, Mo.

134 COTTON.

Adams, W. T., Machine Co., Corinth, Miss.
Attala Foundry & Machine Co., Attala, Ala.
Boomer & Boschert Press Co., Syracuse, N. Y.
Cardwell Machine Co., Richmond, Va.
Chickasaw Iron Works, Memphis, Tenn.
Coldwell-Wilcox Co., Newberg, N. Y.
Cole, R. D., Mfg. Co., Newman, Ga.
Continental Gin Co., Birmingham, Ala.
Copeland, Henry, Chattanooga, Tenn.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York.
Dedrick's, P. K., Sons, Albany, N. Y.
Ertel, George, Co., Quincy, Ill.
Famous Mfg. Co., East Chicago, Ind.
Gullett Gin Co., Amite City, La.
Hyde, Chas. J., Meridan, Miss.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
Janney, A. A., & Co., Montgomery, Ala.
Kingsland Mfg. Co., St. Louis, Mo.
Liddell Co., Charlotte, N. C.
Livermore Foundry & Machine Co., Memphis, Tenn.
Lombard Iron Works & Supply Co., Augusta, Ga.
Martin Machine Works, Meridian, Miss.
Maurer, F. X., & Co., Spencer, Iowa.
Mecklenberg Iron Works, Charlotte, N. C.
Miller, O. H., Fort Valley, Ga.
Murray Co., Dallas, Tex.
Pusey & Jones Co., Wilmington, Del.
Reading Iron Co., Reading, Pa.
Schofield, J. S., Sons Co., Macon, Ga.
Sinclair-Scott Co., Baltimore, Md.
Stedman Foundry & Machine Works, Aurora, Ind.
Thomas-Fordyce Mfg. Co., Little Rock, Ark.
Valk & Murdock Iron Works, Charleston, S. C.
Van Winkle, E., Gin & Machine Works, Atlanta, Ga.
Vulcan Works, Chester, Pa.
West Point Iron Works, West Point, Ga.
Whitehurst, R. W., Co., Norfolk, Va.
Wing-Sayle Foundry & Machine Co., Little Rock, Ark.

PRESSES, continued

135 COTTON SEED AND COTTON SEED OIL.

Boomer & Boschert Press Co., Syracuse, N. Y.
Bushnell, Geo. H., Press Co., Thompsonville, Conn.
Cardwell Machine Co., Richmond, Va.
Copeland, Henry, Chattanooga, Tenn.
Dedrick's P. K., Sons, Albany, N. Y.
Famous Mfg. Co., East Chicago, Ind.
Gullett Gin Co., Amite City, La.
Kingsland Mfg. Co., St. Louis, Mo.
Liddell Co., Charlotte, N. C.
Shriver, T., & Co., 333 E. 56th St., New York.
Southern Standard Press Co., Meridian, Miss.
Stillwell-Bierce & Smith-Vaile Co., Dayton, O.
Valk & Murdoch Iron Works, Charleston, S. C.
Whitehurst, R. W., Co., Norfolk, Va.
Whitman Agricultural Co., St. Louis, Mo.

136 FILTER.

Blymyer Iron Works Co., Cincinnati, O.
Ponnot Co., Canton, O.
Boomer & Boschert Press Co., Syracuse, N. Y.
Bushnell, Geo. H., Press Co., Thompsonville, Conn.
Carbondale Machine Co., Carbondale, Pa.
Cornell, J. B. & J. M., 26th St. and 11th Ave., New York.
Currier, Cyrus & Sons, Newark, N. J.
Dyer, E. H., & Co., New England Bldg., Cleveland, O.
Elmes, Charles F., Engineering Works, Morgan & Fulton Sts., Chicago, Ill.
Guild & Garrison, 457 Kent Ave., Brooklyn, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
Johnson, John, & Co., 1 Franklin Sq., New York.
Perrin, William R., & Co., 46th & Loomis Sts., Chicago, Ill.
Pusey & Jones Co., Wilmington, Del.
Shriver, T., & Co., 333 E. 56th St., New York.
Simpson Foundry Co., 26 Rodney St., Brooklyn, N. Y.
Sperry, D. R., & Co., North Aurora, Ill.
Squier, Geo. L., Mfg. Co., Buffalo, N. Y.
Standard Machine Works, Newark, N. J.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Traud, Alexander, Co., Newark, N. J.
Turner Dryer Co., Louisville, Ky.
Whitney Iron Works Co., New Orleans, La.

137 FRUIT.

Edwards, M. L., Co., Salem, O.
Johnson Foundry & Machine Works, Battle Creek, Mich.
Logan & Strobridge Iron Co., New Brighton, Pa.

138 LINSEED OIL.

Boomer & Boschert Press Co., Syracuse, N. Y.
Bushnell, Geo. H., Press Co., Thompsonville, Conn.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
Staubach, Baldwin, 652 E. 12th St., New York.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.

139 PEANUT OIL.

Buckeye Iron & Brass Works, Dayton, O.

PRESSES, PEANUT OIL, continued

Bushnell, Geo. H., Press Co., Thompsonville, Conn.
Nagley Mfg. Co., Lyons, N. Y.
Phœnix Foundry & Mfg. Co., Ripley, O.
Talbot & Sons, Richmond, Va.

140 TOBACCO.

Adams Tobacco Press Co., Quincy, Ill.
Ball, Mitchell & Co., Maysville, Ky.
Grote Mfg. Co., Evansville, Ind.
Hydraulic Press Mfg. Co., Mt. Gilead, O.

141 WINE AND CIDER.

American Seeding Machine Co., Springfield, O.
Ames Plow Co., Quincy Hall, Boston, Mass.
Baker & Hamilton, San Francisco, Cal.
Boomer & Boschert Press Co., Syracuse, N. Y.
Bushnell, Geo. H., Press Co., Thompsonville, Conn.
Cash Supply & Mfg. Co., Kalamazoo, Mich.
Comstock, Geo. S., Mechanicsburg, Pa.
Donaldson Bros., Mt. Clemens, Mich.
Eagle Machine Co., Lancaster, O.
Enterprise Mfg. Co., 3d & Dauphin Sts., Philadelphia, Pa.
Farquhar, A. B., Co., Ltd., York, Pa.
Haish Mfg. Co., De Kalb, Ill.
Hocking Valley Mfg. Co., Lancaster, O.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
Keystone Farm Machine Co., York, Pa.
Klotz Machine Co., Sandusky, O.
Mast, P. P., & Co., Springfield, O.
New York Agricultural Co., 51 Cliff St., New York.
Schriver, O. P., & Co., Cincinnati, O.
Staubach, Baldwin, 652 E. 12th St., New York.
Streeter, N. R., Rochester, N. Y.
Thomas-Albright Co., Goshen, Ind.
Whitehurst, R. W., Co., Norfolk, Va.
Whitman & Barnes Mfg. Co., Akron, O.
Whitman Agricultural Co., St. Louis, Mo.

142 RICE MACHINERY.

Hullers, Polishers, Shellers, Hull Separators, Graders, etc.

Aultman Co., Canton, O.
Barnard & Leas Manufacturing Co., Moline, Ill.
Blymyer Iron Works Co., Cincinnati, O.
Buffalo Pitts Co., 20 Carolina St., Buffalo, N. Y.
Campbell, M., Fanning Mill Co., Detroit, Mich.
Cardwell Machine Co., Richmond, Va.
Cutaway Harrow Co., Higganum, Conn.
Dickey Manufacturing Co., Racine, Wis.
Engelberg Huller Co., Syracuse, N. Y.
Farquhar, A. B., Co., Ltd., York, Pa.
Geiser Manufacturing Co., Waynesboro, Pa.
Grant-Ferris Co., Troy, N. Y.
Howes, S., Co., Silver Creek, N. Y.
Huntley Manufacturing Co., Silver Creek, N. Y.
International Harvester Co., Chicago, Ill.

RICE MACHINERY, continued

Johnson & Field Manufacturing Co., Racine, Wis.
McSherry Manufacturing Co., Middletown, O.
Monitor Drill Co., Minneapolis, Minn.
Noye Mfg. Co., Buffalo, N. Y.
Squier, Geo. L., Manufacturing Co., Buffalo, N. Y.

143 ROAD BUILDING MACHINERY.

Road Rollers, Graders, Plows, Spiked Rollers and Road Machines; Drag Scrapers, Wheeled Scrapers, Ditching Scrapers; Concrete and Asphalt Mixers, Distributing Wagons, Wagon Loaders, Stone Crushers, etc.

Acme Road Machinery Co., Frankfort, N. Y.
Allis-Chalmers Co., N. Y. Life Ins. Bldg., Chicago, Ill.
American Road Machine Co., Kennett Square, Pa.
American Road Roller Co., 156 Fifth Ave., New York.
American Steel Scraper Co., Sidney, O.
Aultman Co., Canton, O.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Buffalo Pitts Co., Buffalo, N. Y.
Buffalo Steam Roller Co., Buffalo, N. Y.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Climax Road Machine Co., Marathon, N. Y.
Clyde Iron Works, Duluth, Minn.
Drake Standard Machine Works, 300 W. Jackson Boulevard, Chicago, Ill.
Erie Machine Shops, Erie, Pa.
Farrell Foundry & Machine Co., Ansonia, Conn.
Howard Foundry & Machine Co., Lansdowne, Pa.
Indiana Road Machine Co., Fort Wayne, Ind.
Iroquois Iron Works, Buffalo, N. Y.
Kelly-Springfield Road Roller Co., Springfield, O.
Kilbourne & Jacobs Mfg. Co., Columbus, O. *See adv. page 21.*
McKelvey Concrete Machinery Co., 614 N. Y. Life Building, Chicago, Ill.
Municipal Engineering & Contracting Co., Manhattan Building, Chicago, Ill.
National Drill & Mfg. Co., Pullman Bldg., Chicago, Ill.
New Birdsall Co., Auburn, N. Y.
Pioneer Iron Works, 149 William St., Brooklyn, N. Y.
Port Huron Engine Co., Port Huron, Mich.
Scholl, Julian, & Co., 126 Liberty St., New York.
Shuart Grader Co., Oberlin, O.
Sidney Steel Scraper Co., Sidney, O.
Stuebner, G. L., Iron Works, 166-176 Third St., L. I. City, N. Y.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Western Wheeled Scraper Co., Aurora, Ill.

144 RUBBER MACHINERY.

Rubber Tire Machines, Belt Folding Machines, Belt Slitters, Brand Cutters, Rubber Shoe Machines, Wringer Roll Grinders, Doubling Machines, Belt Stretchers, Vulcanizers, Tubing Machines, Hose Making Machines, Hose Wrapping Machines, etc.

Adamson, A., Akron, O.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Birmingham Iron Foundry, Derby, Conn.

RUBBER MACHINERY, continued

Boomer & Boschert Press Co., Syracuse, N. Y.
Chase Machine Co., Cleveland, O.
Clark, Eldred W., Hartford, Conn.
Currier, Cyrus & Sons, Newark, N. J.
Elmes, Chas. F., Engineering Works, Morgan & Fulton Sts., Chicago, Ill.
Excelsior Machine Works, Akron, O.
Farrel Foundry & Machine Co., Ansonia, Conn.
Hoggson Pettis Mfg. Co., New Haven, Conn.
Lampher Rubber Tie Machine Co., Carthage, Mo.
Mackenzie, Duncan & Son, Trenton, N. J.
National Cement & Rubber Mfg. Co., Toledo, O.
National Water Tube Boiler Co., New Brunswick, N. J.
Royle, John, & Sons, Paterson, N. J.
Thropp, John E., & Sons Co., Trenton, N. J.
Thropp, Wm. R., Trenton, N. J.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
Victor Rubber Tire Co., Springfield, O.
Watson, John, Fair & Factory Sts., Trenton, N. J.
Weiss, Otto, Machine Co., Bridgeport, Conn.
Wellman Sole Cutting Machine Co., Medford, Mass.
Williams Foundry & Machine Co., Akron, O.

145 SALT WORKS MACHINERY.

Bartlett, A. F., & Co., Saginaw, Mich.
Deeley, Robt., & Co., 541 W. 32d St., New York.
Fort Scott Foundry & Machine Co., Fort Scott, Kan.
Turl's Iron Works, 534 W. 28th St., New York.
Vulcan Iron Works, Wilkes-Barre, Pa.

146 SCALES AND BALANCES.

147 ASSAYERS' BALANCES.

Ainsworth, William, Sons, Denver, Col.
Becker, Christian, 5 Maiden Lane, New York.
Fairbanks Co., Broome & Elm Sts., New York.
Kohlbusch, Herman, 194 Broadway, New York.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Stoelting, C. H., Co., 31 W. Randolph St., Chicago, Ill.
Thompson, F. W., 1717 Arapahoe St., Denver, Col.
Troemner, Henry, 911 Arch St., Philadelphia, Pa.

148 SCALES, AUTOMATIC.

Advance Machine Co., 194 S. Clinton St., Chicago, Ill.
Automatic Weighing Machine Co., Bay & Greene Sts., Jersey City, N. J.
Clarke Automatic Scale Co., 29 Broadway, New York.
Chicago Recording Scale Co., Waukegan, Ill.
National Automatic Weighing Machine Co., 60 Murray St., New York.
New England Automatic Weighing Machine Co., 275 Congress St., Boston, Mass.
Streeter-Amet Weighing & Recording Co., 140 Dearborn St., Chicago, Ill.

SCALES, continued

149 **COMPUTING.**

Advance Machine Co., 194 S. Clinton St., Chicago, Ill.
Arithmetical Scale Co., Chattanooga, Tenn.
Buffalo Scale Co., Buffalo, N. Y.
Computing Scale Co., Dayton, O.
Fairbanks Co., Broome & Elm Sts., New York.
Forschner, Charles, & Sons, 206 E. 19th St., New York.
Kohlbusch, Herman, 194 Broadway, New York.
Moneyweight Scale Co., 47 State St., Chicago, Ill.
National Computing Scale Co., Cleveland, O.
Pelouze Scale & Mfg. Co., 124 W. Jackson Blvd., Chicago, Ill.
Springer Torsion Balance Co., 92 Reade St., New York.
Standard Computing Scale So., Detroit, Mich.
Stimpson, W. F., Co., Detroit, Mich.
Toledo Computing Scale Co., Toledo, O.
Triner Scale & Mfg. Co., 128 S. Clinton St., Chicago, Ill.
Wilmore Computing Scale Co., Newark, N. J.

150 **HOPPER, PLATFORM OR WAGON, TRACK, ETC.**

Acorn Scale Co., 27 Thames St., New York.
Barker, Samuel G., & Son, Scranton, Pa.
Beckman Bros., Des Moines, Ia.
Brunner, Charles, Peru, Ill.
Buffalo Scale Co., Buffalo, N. Y.
Chicago Scale Co., 296 W. Jackson Blvd., Chicago, Ill.
Cincinnati Scale Mfg. Co., 212 Walnut St., Cincinnati, O.
Como Scales, 62 Plymouth Court, Chicago, Ill.
Fairbanks Co., Broome & Elm Sts., New York.
Fairbanks, E. & T., Co., St. Johnsbury, Vt.
Gaston's, N. B., Sons Co., Beloit, Wis.
Grand Rapids Scale Works, Grand Rapids, Mich.
Howe Scale Co., Rutland, Vt.
Hunt, C. W., Co., 45 Broadway, New York.
Jones of Binghamton, Binghamton, N. Y.
Kansas City Hay Press Co., Kansas City, Mo.
Kimball Bros. Co., Council Bluffs, Ia.
Lowell Scale Co., Lowell, Mass.
McDonald Bros., Pleasant Hill, Mo.
Mead, John A., & Co., 11 Broadway, New York.
Meyer Scale & Hardware Co., Newark, N. J.
Monarch Mfg. Co., Des Moines, Ia.
Monarch Grubber Mfg. Co., Lonetree, Ia.
Osgood Scale Co., Binghamton, N. Y.
Richardson Scale Co., 18 Park Row, New York.
Standard Scale Co., Pittsburg, Pa.
Strait, H. N., Mfg. Co., Kansas City, Kan.

151 SCIENTIFIC INSTRUMENTS.

Including Mathematical, Astronomical, Mining, Engineering, Surveying, Nautical, etc., Instruments.

Ainsworth, William, & Sons, Denver, Col.
Aloe, A. S., & Co., 513 Olive St., St. Louis, Mo.
Anderson, Wm. H., & Sons, Detroit, Mich.
Benoit, A. V., 10 W. 33d St., New York.
Berger, C. L., & Sons, Boston, Mass.
Brandis, F. E., & Sons Co, 812 Gates Ave., Brooklyn, N. Y.

SCIENTIFIC INSTRUMENTS, continued

Buff & Buff Instrument Mfg. Co., Jamaica Plain, Boston, Mass.
Gardam, William, & Son, Inc., 45 Rose St., New York.
Gurley, W. & L. E., Troy, N. Y.
Heller & Brightly, Spring Garden St. & Ridge Ave., Philada.
Indianapolis Blue Print Co., Indianapolis, Ind.
Keuffel & Esser Co., 127 Fulton St., New York.
Knight, F. C., & Co., 400 Locust St., Philadelphia, Pa.
Kolesch & Co., 138 Fulton St., New York.
Lietz, A., Co., 422 Sacramento St., San Francisco, Cal.
Mahn & Co., 300 Olive St., St. Louis, Mo.
Merrill's, Robert, Sons, 110 Wall St., New York.
Mogey, W. & D., Bayonne, N. J.
Pfister, Herman, 428 Plum St., Cincinnati, O.
Queen & Co., Inc., 1010 Chestnut St., Philadelphia, Pa.
Randolph, T. F., Co., Cincinnati, O.
Saegmuller, Geo. N., Washington, D. C.
Slocomb, J. I., & Co., Providence, R. I.
Stackpole & Bro., 39 Fulton St., New York.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa.
Young & Sons, 43 N. 7th St., Philadelphia, Pa.

152 SCREENS.

Including Clay, Cement, Sand, Ore, Coal, Gravel, etc., Screens.

Acme Road Machinery Co., Frankfort, N. Y.
Aitchison, Robert, Perforated Metal Co., 303 Dearborn St., Chicago, Ill.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Clay Working Machinery Co., Bucyrus, O.
American Road Machine Co., Kennett Square, Pa.
Atlanta Wire & Iron Works, Atlanta, Ga.
Aultman Co., Canton, O.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Bacon, Earle C., 26 Cortlandt St., New York.
Barbee Wire & Iron Works, Lafayette, Ind.
Barnum, E. T., Wire & Iron Works, Detroit, Mich.
Beckley, A. J., Co., 284 Pearl St., New York.
Bigelow, Cheney, Wire Works, Springfield, Mass.
Bonnot Co., Canton, O.
California Perforating Screen Co., 147 Beale St., San Francisco, Cal.
Carbondale Machine Co., Carbondale, Pa.
Cincinnati Mfg. Co., 512 Main St., Cincinnati, O.
Climax Road Machine Co., Marathon, N. Y.
Clinton Wire Cloth Co., Clinton, Mass.
Colorado Iron Works Co., Denver, Col.
Connellsville Machine & Car Co., Connellsville, Pa.
Darby, Edward & Sons, 233 Arch St., Philadelphia, Pa.
Davis, F. M., Iron Works Co., Denver, Col.
Day, J. H., Co., Harrison Ave. & Bogen St., Cincinnati, O.
Denver Engineering Works Co., Denver Col.
Dunlap Mfg. Co., Bloomington, Ill.
Eagle Iron Works, Terre Haute, Ind.
Estey Wire Works Co., 59 Fulton St., New York.
Exeter Machine Works, Pittston, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Gilbert & Bennett Mfg. Co., Georgetown, Conn.

SCREENS, continued

Garry Iron & Steel Co., Cleveland, O.
Harrington & King Perforating Co., 224 N. Union St., Chicago.
Hendrick Mfg. Co., Carbondale, Pa.
Howard & Morse, 45 Fulton St., New York.
Hunt, C. W., Co., 45 Broadway, New York.
Indiana Road Machine Co., Fort Wayne, Ind.
Jeffrey Mfg. Co., Columbus, O.
Kenney & Co., Scottdale, Pa.
Krom Machine Works, Jersey City, N. J.
Link-Belt Machinery Co., 39th St. & Stewart Ave., Chicago.
Littleford Bros., 453 E. Pearl St., Cincinnati, O.
Lucas, A., & Sons, Peoria, Ill.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Marine Iron Co., Bay City, Mich.
Mecklenberg Iron Works, Charlotte, N. C.
Meyers, Fred. J., Mfg. Co., Hamilton, O.
Michigan Wire Cloth Co., Detroit, Mich.
Mine & Smelter Supply Co., Denver, Col.
Monongahela Mfg. Co., Monongahela, Pa.
Mundt, Charles, & Sons, 88 Walker St., New York.
Nelsonville Foundry & Machine Co., Nelsonville, O.
Pacific Tank Co., 35 Beale St., San Francisco, Cal.
Phillips Mine & Mill Supply Co., Pittsburg, Pa.
Phœnix Wire Works, Detroit, Mich.
Prox & Brinkman Mfg. Co., Terre Haute, Ind.
Raymond, C. W., Co., Dayton, O.
San Francisco Pioneer Screen Works, 2221 1st St., San Francisco, Cal.
Scaife Foundry & Machine Co., Ltd., Pittsburg, Pa.
Schule, F. H., Co., 27 Thames St., New York.
Seibel-Suessdorf Copper & Iron Mfg. Co., St. Louis, Mo.
Simpson, H. S., Electric Bldg., Cleveland, O.
South St. Louis Foundry, St. Louis, Mo.
Stedman's Foundry & Machine Works, Aurora, Ind.
Steele & Condict, Pearl and Steuben Sts., Jersey City, N. J.
Syracuse Wire Works, 315 E. Water St., Syracuse, N. Y.
Taylor Iron & Steel Co., High Bridge, N. J.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
Tyler, W. S., Co., 1150 St. Clair St., Cleveland, O.
Union Iron Works, 222 Market St., San Francisco, Cal.
Urie Boiler & Machine Co., Kansas City, Mo.
Vulcan Iron Works, Wilkesbarre, Pa.
Wallace, Samuel, White Haven, Pa.
Western Wheeled Scraper Co., Aurora, Ill.
Wickwire Bros., Cortland, N. Y.
Wisconsin Iron & Wire Works, 186 E. Water St., Milwaukee.
Wright Wire Co., Worcester, Mass.

153 SEWER PIPE MACHINERY.

Sewer Pipe Presses, Auger Machines, Cutting Machines, etc.

Akron Engineering Co., Akron, O.
American Clay Working Machinery Co., Bucyrus, O.
Arnold-Creagor Co., Cincinnati, O.
Bonnot Co., Canton, O.
Davis-Price Foundry & Machine Co., New Cumberland, W. Va.

SEWER PIPE MACHINERY, continued

Freese, E. M., & Co., Galion, O.
Means Foundry & Machine Co., Steubenville, O.
Raymond, C. W., Co., Dayton, O.
Stevenson Co., Wellsville, O.
Taplin, Rice & Co., Akron, O.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O. *See adv. page 52.*
Wellman-Seaver-Morgan Co., Cleveland, O.

154 SEWING MACHINES.

155 FACTORY. For Sewing Bags, Belts, Buttonholes, Carpet, Corsets, Fur, Gloves, Hats, Leather, etc.

Arnold Sewing Machine Co., Newark, N. J.
Arbes Machine Co., 787 Broadway, New York.
Baker, G. W., & Co., Wilmington, Del.
Birch Bros. Co., Somerville, Mass.
Bulasky, L., 173 Prince St., New York.
Campbell-Bosworth Machinery Co., 205 Lincoln St., Boston.
Cassard, Herbert, 332 N. Holliday St., Baltimore, Md.
Champion Buttonhole Machine Co., 368 Congress St., Boston.
Curtin-Hebert Mfg. Co., Gloversville, N. Y.
Davis Sewing Machine Co., Dayton, O.
Demorest Mfg. Co., Williamsport, Pa.
Dinsmore Mfg. Co., Salem, Mass.
Durbrow & Hearne Mfg. Co., 12 Wooster St., New York.
Excelsior Sewing Machine Co., 584 Hudson St., New York.
Fales, L. F., Walpole, Mass.
Illinois Sewing Machine Co., Wabash Ave. & Randolph St., Chicago, Ill.
Industrial Mfg. Co., Camden, N. J.
James, Emile, 22 E. 8th St., New York.
Kruse & Murphy Mfg. Co., 100 E. 130th St., New York.
Landis Machine Co., St. Louis, Mo.
Lufkin, John W., 38 Chardon St., Boston, Mass.
Model Machine Co., Bridgeport, Conn.
New Home Sewing Machine Co., Orange, Mass.
O'Flaherty, John, Co., Rouse Point, N. Y.
Puritan Mfg. Co., 72 Lincoln St., Boston, Mass.
Reece Buttonhole Machine Co., Boston, Mass.
Singer Mfg. Co., 569 Broadway, New York.
Stanley Mfg. Co., Boston, Mass.
Taft Machine Co., Providence, R. I.
Union Button Sewing Machine Co., 164 High St., Boston, Mass.
Union Special Sewing Machine Co., 75 E. Kinzie St., Chicago.
Wheeler & Wilson Mfg. Co., Bridgeport, Conn.
Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York.

156 HOUSEHOLD.

Davis Sewing Machine Co., Dayton, O.
Demorest Mfg. Co., Williamsport, Pa.
Domestic Sewing Machine Co., Newark, N. J.
Foley & Williams Mfg. Co., 46 Jackson St., Chicago, Ill.
Household Sewing Machine Co., 9 E. 14th St., New York.
Illinois Sewing Machine Co., Wabash Ave. & Randolph St., Chicago, Ill.

SEWING MACHINES, HOUSEHOLD, continued

Kruse Sewing Machine Co., 218 Sixth Ave., New York.
Mason, A. H., Mfg. Co., Cleveland, O.
National Sewing Machine Co., Belvidere, Ill.
New Home Sewing Machine Co., Orange, Mass.
New York-Pittsburg Mfg. Co., 210 Canal St., New York.
Singer Mfg. Co., 569 Broadway, New York.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Standard Sewing Machine Co., Cleveland, O.
Wheeler & Wilson Mfg. Co., Bridgeport, Conn.
White Sewing Machine Co., Cleveland, O.
Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York. York.
Williams Mfg. Co., Ltd., Plattsburg, N. Y.

157 **SPECIAL MACHINES AND SEWING MACHINE ATTACHMENTS. Including Pinking, Ruffling, Ruching, Plaiting, etc., Machines.**

Chandler Co., Ayer, Mass.
Durbrow & Hearne Mfg. Co., 12 Wooster St., New York.
Greist Mfg. Co., New Haven, Conn.
New York Dress Plaiting Co., 140 W. 23d St., New York.
Osborne, C. S., & Co., Newark, N. J.
Stimpson, Edward B., & Son, 31 Spruce St., New York.
Weiss, George W., 374 Canal St., New York.
Wiebke, Charles, 211 Centre St., New York.

158 SHOE MACHINERY.

Sole Cutting Machines, Eyeletters, Channel Laying Machines, Perforating Machines, Edge Folding Machines, Sole Molders, Levelers, Splitters, Scouring Machines, Heel Breast Finishing Machines, Spring Heel Scourers and Finishers, Polishers, Beaders, Edge Polishers, Snippers, Tip Setters, Sand Paper Machines, Buffing Machines, Embossing Machines, etc.

Allen Machine Co., Haverhill, Mass.
Alliance Shoe Machinery Co., Broad & New Sts., New York.
Automatic Heel Machinery Co., Lynn, Mass.
Booth Bros., Rochester, N. Y.
Bresnahan Shoe Machinery Co., Lynn, Mass.
Buzzell, J. G., & Co., 102 High St., Boston, Mass.
Carver Cotton Gin Co., East Bridgewater, Mass.
Champion Shoe Machinery Co., St. Louis, Mo.
Consolidated Rotary Rounder Co., 205 Lincoln St., Boston, Mass.
Duplessis Shoe Machine Co., Haverhill, Mass.
Fifield Shoe Machinery Co., Boston, Mass.
Hart, T. F., Machine Co., Lynn, Mass.
Hawkins, L. D., Machine Co., 48 South St., Boston, Mass.
Horn, Wm., & Bro., 451 North 3rd St., Philadelphia, Pa.
Krieg, J. K., & Co., 39 Warren St., New York.
Lufkin, R. H., 38 Chardon St., Boston, Mass.
Mitchell, Robert, Machine Co., Detroit, Mich.
Naumkeag Buffing Machine Ass'n, Beverly, Mass.
Newton, H. B., Machine Co., 100 Purchase Pl., Boston, Mass.
Peerless Machinery Co., 44 Binford St., Boston, Mass.
Stanborn, Chas. P., & Co., Lynn, Mass.

SHOE MACHINERY, continued

Stanley Mfg. Co., 108 Summer St., Boston, Mass.
Sweetser, Wm. A., Brockton, Mass.
United Shoe Machinery Co., 205 Lincoln St., Boston, Mass.
Webster Machine Co., Haverhill, Mass.

159 ACCESSORIES. Lasts, Trees, Dinkers, Toe and Instep Stretchers, etc.

Arnold Bros. Co., North Abington, Mass.
Bailey, John C., Lynn, Mass.
Baxendale Box Toe Co., Brockton, Mass.
Beaudry, T. J., Marleborough, Mass.
Belcher, Geo. E., Last Co., Stoughton, Mass.
Bertsch, Adam, Rochester, N. Y.
Blake, E. C., & Co., Lynn, Mass.
Boston Last Co., 162 Lincoln St., Boston, Mass.
Breed, Fred. J., Lynn, Mass.
Brockton Last Co., Brockton, Mass.
Buffalo Last Works, Buffalo, N. Y.
Chicago Last & Die Co., 196 S. Clinton St., Chicago, Ill.
Crawford, McGregor & Canby Co., Dayton, O.
Cross, D. E., Rochester, N. Y.
Day Wood Heel Co., Lynn, Mass.
Dunbar Pattern Co., Brockton, Mass.
Earle, Geo. B., Brockton, Mass.
Empire Last Works, 296 N. State St., Rochester, N. Y.
Gardiner, Thos. W., Lynn, Mass.
Golbert, R. L., & Co., Worcester, Mass.
Goodwin Bros., Lynn, Mass.
Hovey, J. H., & Son, Haverhill, Mass.
Kempton, C. C., & Son, 320 Race St., Philadelphia, Pa.
Krentler Bros. Co., Detroit, Mich.
McNeill, R. S., Jay & Water Sts., Brooklyn, N. Y.
Marlboro Last Co., Marlboro, Mass.
Mawhinney Last Co., Brockton, Mass.
Miller, Geo. W., Rochester, N. Y.
Miller, O. A., Treeing Machine Co., Brockton, Mass.
Morrell & Abbott, 229 Central Ave., Newark, N. J.
New York Last Co., 82 Beekman St., New York.
Nichols, H. & O. D., Haverhill, Mass.
Parrott, Geo. W., & Son, Lynn, Mass.
Pell, John, & Son, Inc., 5 Railroad Pl., Newark, N. J.
Philadelphia Last & Pattern Co., 318 Cherry St., Philadelphia.
Porter, S., & Co., Worcester, Mass.
Rebhun, D. C., & Co., 315 Hunt St., Cincinnati, O.
Redifer, O. L., 210 New St., Philadelphia, Pa.
Redifer, S. S., & Co., 135 Race St., Philadelphia, Pa.
Rochester Last, Die & Pattern Works, Rochester, N. Y.
Roney, J. Byron, Lynn, Mass.
Root Bros. Co., Plymouth, O.
Ross Heel Co., South Easton, Mass.
Ross-Mayer Mfg. Co., 38-40 La Salle St., Chicago, Ill.
St. Louis Last Co., 13th & Palm Sts., St. Louis, Mo.
Snell & Atherton, 72 Snell St., Brockton, Mass.
Stewart & Potter Co., 191 Worth St., New York.
Stuart, F. W., & Co., Beverly, Mass.
Sutherland, I. G., & Sons, Lynn, Mass.
Tuck Manufacturing Co., Brockton, Mass.

SHOE MACHINERY ACCESSORIES, continued

Van Pelt, Geo. H., 45 Huron St., Chicago, Ill.
Wadleigh, L. C., & Sons, Haverhill, Mass.
Whitcomb, Henry W., & Co., Lynn, Mass.
Whitmore & Kitchen, Lynn, Mass.
Woodard & Wright, Campello, Mass.
Young, Sampson & Hollis, Lynn, Mass.

160 SOAP MACHINERY.

Amalgamators, Die Presses, Mills, Plodders, Crutchers, Mixers, Molds, etc.

Aiken, Chas. W., 1 Eppirt St., East Orange, N. J.
American Wrapping & Box Machine Co., 40 Wall St., New York.
Blanchard Machine Co., 16 Harcourt St., Boston, Mass.
Blettner, Joseph, & Co., 1974 Central Ave., Cincinnati, O.
Brown & Patterson, 33 Marcy Ave., Brooklyn, N. Y.
Condon, Thomas F., & Co., 8-12 Jay St., New York.
Detroit Soap Co., Detroit, Mich.
Doll, Arnold, 1624 Wilson Ave., Cleveland, O.
Dopp, H. W. Co., 1300 Niagara St., Buffalo, N. Y.
Dunning, W. D., Syracuse, N. Y.
Garrigues, W. E., 15 Cortlandt St., New York.
Hersey Manufacturing Co., So. Boston, Mass.
Houchin & Huber, 39 53d St., Brooklyn, N. Y.
Joslin, Schmidt & Co., Cincinnati, O.
Philadelphia Pipe Bending Works, 4141 No. 5th St., Philadelphia, Pa.
Rempe Co., Sacramento & Carroll Aves., Chicago, Ill.
Rutshman, Oscar F., 5th & Berks Sts., Philadelphia, Pa.
Sperry, D. R., & Co., Batavia, Ill.
Universal Machine Development Co. 29 Broadway, New York.
Wetherill, Jas. P., Machine Co., Chester, Pa.
Wilson & Muzzy, Pittsburg, Pa.
Wold, Torris, & Co., 66 N. Jefferson St., Chicago, Ill.

161 **ACCESSORIES. Soap Dies, Kettles, etc.**

Fries, Anthony J., 717 Sycamore St., Cincinnati, O.
Meyer-Jensen & Co., 2-6 Reade St., New York.
Mooney & Bueter, 231 S. Canal St., Chicago, Ill.
Schridde, William, 31-37 S. Clark St., Chicago, Ill.

162 STENCIL CUTTING MACHINES.

Bradley Stencil Machine Co., St. Louis, Mo.

163 STEREOPTICONS.

Colt, J. B., Co., 21 Barclay St., New York.
McAllister, T. H., 49 Nassau St., New York.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa.

164 STERILIZING APPARATUS.

Bramhall, Deane Co., 262 Water St., New York.
Kellogg & Wakefield Mfg. Co., Winsted, Conn.
Valk & Murdock Iron Works, 14 Hasell St., Charleston, S. C.

165 STERILIZING WASHING MACHINES.

Adams Laundry Machinery Co., Troy, N. Y.
American Laundry Machinery Co., Cincinnati, O.
Barnes & Erb Co., 3846 Lancaster Ave., Philadelphia, Pa.
Bess Machine Co., Hamilton, O.
Craw, J. W., Laundry Machinery Co., South Norwalk, Conn.
Empire Laundry Machinery Co., Boston, Mass.
Grever, Edward C., & Co., 53 Central Ave., Cincinnati, O.
Hagan, A. T., Co., Rochester, N. Y.
Lovewell-Henrici Co., Chelsea, Mass.
Nelson & Kreuter Co., 42 S. Clinton St., Chicago, Ill.
Poland Laundry Machinery Co., 47 Kemble St., Boston, Mass.
Troy Laundry Machinery Co., Ltd., Troy, N. Y.
Warren Electric Co., Sandusky, O.
Watkins Laundry Machinery Co., Spring Grove Ave. & Alabama St., Cincinnati, O.
Wilson Laundry Machinery Co., Columbia, Pa.

166 STONE WORKING MACHINERY AND TOOLS.

Surfacing, Planing, Grooving, Trimming, Drilling Machines, Lathes, Mosaic Machines, Carvers' and Slaters' Tools, Sawing Machines, Rubbing Beds, etc.

Anderson, W. H., & Sons, St. Aubin Ave., Detroit, Mich.
Dallett, Thos. H., & Co., York St. & Sedgley Ave., Phila, Pa.
Duplex Roller Bushing Co., Belfast, Me.
Farrel Foundry & Machine Co., Ansonia, Conn.
Flory, S., Mfg. Co., Bangor, Pa.
Frenier & Son, Rutland, Vt.
Gordon Foundry & Machine Co., St. Joseph, Mo.
Hawley, E. J. & C. H., Manchester, Vt.
Hinds, Thomas, Malone, N. Y.
Jamison-Combe Iron Works, St. Joseph, Mo.
Kotten, H. G., 150 Nassau St., New York.
Lincoln Iron Works, Rutland, Vt.
Lord, Bowler & Co., Cleveland, O.
Maynard, C. T., & Co., Fair Haven, Vt.
New Albany Mfg. Co., New Albany, Ind.
Patch, F. R., Mfg. Co., Rutland, Vt.
Pattin Bros., Marietta, O.
Preslar-Crawley Mfg. Co., 219 W. 2d St., Cincinnati, O.
Putnam Machine Co., Fitchburg, Mass.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Phila, Pa.
Ruggles Machine Co., Poultney, Vt.
St. Cloud Iron Works, St. Cloud, Minn.
Seward & Co., Bloomington, Ind.
Smith, Whitcomb & Cook Co., Barre, Vt.
Stone Working Machine Co., 41 Wall St., New York.
Trow & Holden, Barre, Vt.
Walton, P. M., 1023 Germantown Ave., Philadelphia, Pa.
West Leechburg Steel & Tin Plate Co., Pittsburg, Pa.

167 STREET CLEANING MACHINERY.

Abbott-Downing Co., Concord, N. H.

STREET CLEANING MACHINERY, continued

Acme Road Machinery Co., Frankfort, N. Y.
American Road Machine Co., Kennett Square, Pa.
American Road Roller Co., 156 Fifth Ave., New York.
American Street Flushing Machine Co., St. Louis, Mo.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Greene Mfg. Co., Springfield, O.
Hyass, Charles, 509 E. 18th St., New York.
Kisinger-Ison Co., Cincinnati, O.
Municipal Engineering & Contracting Co., Manhattan Building, Chicago, Ill.
Stroud, E. A., & Co., 36 La Salle St., Chicago, Ill.
Scholl, Julian & Co., 126 Liberty St., New York.
Studebaker Bros., Mfg. Co., South Bend, Ind.
Western Wheeled Scraper Co., Aurora, Ill.

168 STUCCO MACHINERY.

Butterworth & Lowe, Inc., Grand Rapids, Mich.
Ehrsam, J. B., & Sons Mfg. Co., Enterprise, Kan.

169 SUGAR MACHINERY.

Cane Cutters and Shredders, Cane Mills, Clarifiers, Condensers, Centrifugals, Defecators, Evaporators, Granulators, Macerators, etc.

American Foundry & Mchy. Co., 98 Jackson Blvd., Chicago, Ill.
American Tool & Machine Co., 109 Beach St., Boston, Mass.
Bartlett, Hayward, & Co., 100 Broadway, New York.
Bell, C. S., Co., Hillsboro, O.
Birmingham Machine & Foundry Co., Birmingham, Ala.
Blymyer Iron Works Co., Cincinnati, O.
Cazes, P. A., 507 E. Blvd., Baton Rouge, La.
Coldwell-Wilcox Co., Newburg, N. Y.
Colwell, Augustus W., 29 Broadway, New York.
Cornell, J. B. & J. M., 26th St. and Eleventh Ave., New York.
Deeley, Robert, & Co., 541 W. 32d St., New York.
Deming, E. W., New Rochelle, N. Y.
Densmore Bros., Red Wing, Minn.
Fulton Iron Works, Inc., St. Louis, Mo.
Gaussiran, Jules, Baldwin, La.
Hepworth, S. S., Co., 92 William St., New York.
Hersey Mfg. Co., So. Boston, Mass.
Kilby Mfg. Co., Cleveland, O.
Krajewski-Pesent Co., 32 Broadway, New York.
Mecklenberg Iron Works, Charlotte, N. C.
Morris, Henry G., 408 The Bourse, Philadelphia, Pa.
Murphy's, John H., Iron Works, Magazine and Girod Sts., New Orleans, La.
Newell Mfg. Co., 149 Broadway, New York.
Newhall, Geo. M., Engineering Co., 136 So. 4th St., Philda, Pa.
Oxnard Construction Co., 32 Nassau St., New York.
Payne & Joubert, 423 Carondelet St., New Orleans, La.
Pioneer Iron Works, 149 William St., Brooklyn, N. Y.
Pusey & Jones Co., Wilmington, Del.
Quincy Engine Works, Quincy, Ill.
Reynolds Iron Works, New Orleans, La.
Schwartz Foundry Co., New Orleans, La.
Shakespeare Iron Works, 913 Girod St., New Orleans, La.

SUGAR MACHINERY, continued

Southern Plow Co., Columbus, Ga.
Squier, Geo. L., Mfg. Co., Buffalo, N. Y.
Sugar Apparatus Mfg. Co., 528 Chestnut St., Philadelphia, Pa.
Turl's, John, Son, 534 W. 28th St., New York.
Whitney Iron Works Co., New Orleans, La.
Wolf, Fred W., Co., 139 Rees St., Chicago, Ill.
Woodward, Wright & Co., Ltd., 406-420 Canal St., New Orleans.

170 SURGICAL INSTRUMENTS.

Canton Surgical & Dental Chair Co., Canton, O.
Chambers, Inskeep & Co., 88 Wabash Ave., Chicago, Ill.
Codman & Shurtleff, 13 Tremont St., Boston, Mass.
Haussman & Dunn, 107 So. Clark St., Chicago, Ill.
Sharp & Smith, 92 Wabash Ave., Chicago, Ill.
Tiemann, George, & Co., 107 Park Row, New York.
Wall & Ochs, Philadelphia, Pa.

171 VETERINARY SURGICAL INSTRUMENTS.

Haussman & Dunn, 107 S. Clark St., Chicago. Ill.
Sharp & Smith, 92 Wabash Ave., Chicago, Ill.

172 TANKS.

Aermotor Co., Cor. W. 12th & Rockwell Sts., Chicago, Ill.
Allis-Chalmers Co., New York Life Bldg., Chicago, Ill.
American Mfg. Co., 2121 Louisiana Ave., New Orleans, La
American Stave & Cooperage Co., 156 State St., Boston, Mass.
Baltimore Cooperage Co., Baltimore, Md.
Burkhardt's, Geo. J., Sons, 2831 N. Broad St., Philadelphia, Pa.
Butler Co., Butler, Ind.
Caldwell, W. E., Co., Louisville, Ky.
Colorado Iron Works Co., Denver, Col.
Consolidated Pipe Co., Los Angeles, Cal.
Corcoran, Andrew J., 11 John St., New York.
Cypress Lumber Co., 153 Milk St., Boston, Mass.
Cypress Tank & Mfg. Co, Patterson, La.
Dallas Cooperage Co., 243 S. Austin St., Dallas, Tex.
Davis, C. H., Brattleboro, Vt.
Davis, G. M., & Son, Palatka, Fla.
Dunck, Hy., 1012 Sherman St., Milwaukee, Wis.
Excelsior Redwood Co., Channel & 4th Sts., San Francisco.
Fernholz Lumber Co., Jefferson, Wis.
Fleming Tank Co. 3115 Liberty St, Pittsburg, Pa.
Flint & Walling Mfg. Co., Kendallville, Ind.
Freeman, S., & Sons, Mfg. Co., Racine, Wis.
Gray's Harbor Commercial Co., Cosmopolis, Wash.
Gulf Cypress Tank Co., Mobile, Ala.
Hall, Amos H., Son, & Co., 2915 N. 2d St., Philadelphia, Pa.
Hauser, Brenner & Fath Co., McLean Ave. & Bank St., Cincinnati, O.
Hayes Pump & Planter Co., Galva. Ill.
Headen, Frank, Tank Works, 120 Indiana St., Chicago, Ill.
Hooper, C. A., Co., 4th & Channel Sts., San Francisco, Cal.
Huber, Arnold, 233 Central Ave., Los Angeles, Cal.
Johnson & Carlson, 256 N. Halsted St., Chicago, Ill.
Ketter, Fred, 584 4th St., Milwaukee, Wis.

TANKS, continued

Korbel, F., & Bros., North Fork Mill, Cal.
Lewis, H. F., & Co., Ltd., 316 Baronne St., New Orleans, La.
Los Angeles Cooperage Co., Lazard & Santa Fe tracks, Los Angeles, Cal.
Markham Mfg. Co., Plymouth, Mich.
Marseilles Mfg. Co., Marseilles, Ill.
Michel Bros., Cooperage Co., Sandusky, O.
Mine & Smelter Supply Co., Denver, Col.
Minneapolis Steel & Mchy. Co., 2854 Minnehaha Ave., Minneapolis, Minn.
Minnesota Tank Co., 405 S. 1st St., Minneapolis, Minn.
National Engineering Co., Saginaw, Mich.
Northwestern Wind Engine Co., 110 3d Ave., Minneapolis.
Pacific Mfg. Co., Santa Clara, Cal.
Pacific Tank Co., 33 Beale St., San Francisco, Cal.
Petroleum Iron Works Co., Washington, Pa.
Phillips & Worthington, 136 Liberty St., New York.
Pierce, W. E., & Co., Milford, N. H.
Puffer-Hubbard Mfg. Co., 26th & 32d Ave., S., Minneapolis.
Reed, & Sherwood, Anoka, Mich.
Roberts, T. W., Bradford, Pa.
Rose, F. M., & Son, Oakland, Cal.
Scaife, Wm. B., & Sons, Co., 221 1st Ave., Pittsburg, Pa.
Schwarzwalder, J., & Sons, 629 W. 51st St., New York.
Selden Cypress Door Co., Palatka, Fla.
Silver Bros., Iron Works Co., Salt Lake City, Utah.
Smith, John M., & Sons, 1429 Spring Garden St., Philadelphia.
Standard Mfg. Co., Galesburg, Ill.
Stearns, A. T., Lumber Co., 166 Devonshire St., Boston, Mass.
Stecher Cooperage Works, 2907 S. 7th St., St. Louis, Mo.
Stover Mfg. Co., Freeport, Ill.
Tallerday Steel Pipe & Tank Co., Waterloo, Ia.
Thompson & Boyle, Los Angeles, Cal.
Tranor's, O. J., Son, New Iberia, La.
United States Wind Engine & Pump Co., Batavia, Ill.
Vorhees & Fisk, Burlington, Wis.
Wandelt, Samuel, 61 N. 3d St., Brooklyn, N. Y.
Watson Wooden Tank Co., 418 3d Ave., Pittsburg, Pa.
Weigele Pipe & Sheet Metal Works, 2949 Larimer St., Denver, Col.
Wendnagel & Co., W. 22d & S. Jefferson Sts., Chicago, Ill.
Williams Mfg. Co., Kalamazoo, Mich.
Wood, P. K., Los Angeles, Cal.
Woolford, George Wood Tank Mfg. Co., Real Estate Trust Bldg., Philadelphia, Pa.

173 TESTING MACHINERY.

Buffalo Scales Co., Buffalo, N. Y.
Falkenau-Sinclair Machine Co., 109 N. 22d St., Philadelphia.
Olsen, Tinius, & Co., 500 N. 12th St., Philadelphia, Pa.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philda.

174 CEMENT.

Clark & Mills, 543 Boylston St., Boston, Mass.
Falkenau-Sinclair Co, 109 N. 22d St., Philadelphia, Pa.
Olsen, Tinius, & Co., 500 N. 12th St., Philadelphia, Pa.

TESTING MACHINERY, CEMENT, continued

Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philda.

175 **CHAIN.**

Olsen, Tinius, & Co., 500 N. 12th St., Philadelphia, Pa.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

176 **HYDRAULIC.**

Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philda, Pa.
Sellers, Wm., & Co., Inc., 1600 Hamilton St., Philadelphia, Pa.

177 **PAPER.**

Perkins, B. F., & Son, Holyoke, Mass. *See adv. page 121.*

178 **PIPE.**

Watson-Stillman Co., 46 Dey St., New York.

179 **SPRING.**

Evans', John, Sons, 13th & Buttonwood Sts., Philadelphia, Pa.

180 **WIRE.**

Morgan Construction Co., Worcester, Mass.
Olsen, Tinius, & Co., 500 N. 12th St., Philadelphia, Pa.

181 TILE MACHINERY.

Tile Cutters, Tile Machines, Presses, etc.

Adrian Brick & Tile Machine Co., Adrian, Mich.
American Clay Working Machinery Co., Bucyrus, O.
Anderson Foundry & Machine Works, Anderson, Ind.
Arnold-Creagor Co., Cincinnati, O.
Bonnot Co., Canton, O.
Brewer, H., & Co., Tecumseh, Mich.
Crossley Mfg. Co., Trenton, N. J.
Fate, J. D., & Co., Plymouth, O.
Freese, E. M., & Co., Galion, O.
Kells Foundry & Machine Co., Hudson, Mich.
Leader Mfg. Co., Decatur, Ill.
Madden & Co., Rushville, Ind.
Martin, Henry, Brick Machine Mfg. Co., Lancaster, Pa.
Michigan Brick & Tile Machine Co., Morenci, Mich.
Perkins Machine Co., Warren, Mass.
Raymond, C. W., Co, Dayton, O.
Taplin, Rice & Co., Akron, O.

182 TIME RECORDING SYSTEMS.

American Watchman's Time Detector Co., 234 Broadway, N. Y.
Automatic Time Stamp Co., 160 Congress St., Boston, Mass.
Cincinnati Time Recording Co., 1725 Central Ave., Cincinnati.
Dey Time Register Co., 305 N. State St., Syracuse, N. Y.
Eco Magneto Clock Co., 640 Atlantic Ave., Boston, Mass.
Edward & Co., 407 E. 144th St., New York.
Howard, E., Clock Co., 403 Washington St., Boston, Mass.
International Time Recording Co., Binghamton, N. Y.
Johnson Service Co., Milwaukee, Wis.

TIME RECORDING SYSTEMS, continued

Nanz & Co., 127 Duane St., New York.
Simplex Time Recorder Co., Gardner, Mass.
Waggoner Watchman Clock Co., Grand Rapids, Mich.

183 TOBACCO MACHINERY.

Dryers, Coolers, Orderers, Leaf Softeners, Retainers, Dipping Machines, Wringing Machines, Granulators, Packers, Casers, Lump Machines, Leaf Tobacco Packers, Scrap Bunchers, Long Filler Bunching Machines, Cigarette Machines, etc.

Adt, John B., Machine Works, 332-342 N. Holliday St., Baltimore, Md.
Borgfeldt, N. H., Machine Works, 341 E. 59th St., New York.
Buckeye Iron & Brass Works, Dayton, O.
Cardwell Machine Co., 1511 Cary St., Richmond, Va.
De Beauvais, J., 155th St. & Elton Ave., New York.
Enterprise Manufacturing Co., 3d & Dauphin Sts., Philadelphia, Pa.
Erie Specialty Co., Erie, Pa.
Levy, H., 305 Pearl St., New York.
Logan & Strobridge Iron Co., New Brighton, Pa.
McGowan, John H., Co., Cincinnati, O.
Mayo, Hyson & Co., Richmond, Va.
Miller, Debruel & Peters Mfg. Co., Cincinnati, O.
National Specialty Mfg. Co., Philadelphia, Pa.
North Bros. Manufacturing Co., Lehigh & Amer Sts., Philadelphia, Pa.
Rabell Prudencio Cigarette Machine Co., 105 Water St., New York.
Richmond Wood Working Co., Richmond, Va.
Rockhill Machine Works, Lynchburg, Va.
Shirk, P. E., Blue Ball, Pa.
Unique Machine Co., Cincinnati, O.
Winston Cigarette Machine Co., Winston, N. C.
Winter, L. F., 418 W. 27th St., New York.

184 TUMBLER WASHING MACHINES.

Rowe, L. L., 24 Portland St., Boston, Mass.
Whiteman Mfg. Co., Canton, O.

185 TYPEWRITING MACHINES.

Acme Typewriter Co., 108 Fulton St., New York.
American Typewriter Co., 265 Broadway, New York.
American Writing Machine Co., 343 Broadway, New York.
Blickensderfer Mfg. Co., 195 La Salle St., Chicago, Ill.
Cahill Writing Machine Mfg. Co., Washington, D. C.
Chicago Writing Machine Co., 94 Wendell St., Chicago, Ill.
Columbia Typewriter Mfg. Co., 37 W. 116th St., New York.
Crandall Machine Co., Groton, N. Y.
Densmore Typewriter Co., 309 Broadway, New York
Eagle Typewriter Co., 621 Broadway, New York.
Elliott-Fisher Co., 396 Broadway, New York.
Fay-Sholes Co., 127 Reed St., Chicago, Ill.
Fox Typewriter Co., Ltd., Grand Rapids, Mich.
Franklin Typewriter Co., 812 Greenwich St., New York.

TYPEWRITING MACHINES, continued

Hammond Typewriter Co., 537 E. 69th St., New York.
Handy Typewriter Co., 140 Nassau St., New York.
Hartford Typewriter Co., Hartford, Conn.
Imperial Typewriter Co., 123 Liberty St., New York.
Jewett Typewriter Co., Des Moines, Ia.
Lambert Typewriter Co., 1274 Broadway, New York.
Monarch Typewriter Machine Co., Syracuse, N. Y.
National Typewriter Co., Lehigh Ave. & 15th St., Philda.
Oliver Typewriter Co., 109 Lake St., Chicago, Ill.
Pan-American Machine Co., 115 Pearl St., New York.
Paragon Writing Machine Co., 71 Broadway, New York.
Pittsburg Writing Machine Co, Pittsburg, Pa.
Postal Typewriter Co., 45 Cliff St., New York.
Prendergast Electric Typewriter Co., 5 Beekman St., N. Y.
Remington Typewriter Co., 327 Broadway, New York.
Simplex Typewriter Co., 24 E. 13th St., New York.
Smith, L. C., & Bros., Typewriter Co., Syracuse, N. Y.
Smith Premier Typewriter Co, Syracuse, N. Y.
Sun Typewriter Co., 239 Broadway, New York.
Underwood Typewriter Co., 241 Broadway, New York.
Williams Mfg. Co., Plattsburg, N. Y.
Williams Typewriter Co., Derby, Conn.
Yost Writing Machine Co., Bridgeport, Conn.

186 VARNISH MAKERS' MACHINERY.

Kent Machine Works, 246 Plymouth St., Brooklyn, N. Y.

187 VARNISHING AND LACQUERING MACHINES.

Burt Machine Co., Baltimore, Md.
Chambers Bros., Co., 51st St. & Lancaster Ave., Philadelphia.
Currier, Cyrus, & Sons, Newark, N. J.
Knapp, Fred H., Co., 80 Wabash Ave., Chicago, Ill.
Ohl Automatic Machine Co., Newark, N. J.

188 VENDING MACHINES, COIN OPERATED.

Advance Machine Co., 194 S. Clinton St., Chicago, Ill.
Agner, Hugh, 84 Market St., Chicago, Ill.
American Automusic Co., 53 Broadway, New York.
Automatic Machine & Tool Co., 43 S. Canal St., Chicago, Ill.
Automatic Target Machine Co., 62 Reade St., New York.
Automatic Vending Co., 240 W. 23d St., New York.
Boesch Mfg. Co., Danbury, Conn.
Caille Bros., Co., 1427-1457 Woodward Ave., Detroit, Mich.
Canda, Leo, Co., Cincinnati, O.
Cretors, C., & Co., 22d & Jefferson Sts., Chicago Ill.
Coin Operative Machine Co., 31 Union Sq., New York.
Davenport Novelty Co., Davenport, Ia.
East Side Vending Machine Co., Toledo, O.
Edmonds-Metzel Mfg. Co., 153-159 S. Jefferson St., Chicago, Ill.
Enterprise Vending Machine Co., 152 Lake St., Chicago, Ill.
Erickson & Fagan, Charlevois, Mich.
Jay, Charles H., 251 S. Jefferson St., Chicago, Ill.
McArthur Vending Machine Co., 118 S. 2d St., Des Moines, Ia.
McDonald, J. W., Chicago Ill.
Miles, C. H., 72 S. Canal St., Chicago, Ill.

VENDING MACHINES, continued

Mills Novelty Co., 11-23 S. Jefferson St., Chicago, Ill.
National Automatic Machine Co., 60 Murray St., New York.
National Penny Sales Co., 73 W. Washington St., Chicago, Ill.
National Vending Machine Co., 2518 Wabash Ave., Chicago, Ill.
New York Opera Glass Supply Co., 133 William St., New York.
Pan-American Machine Co., 117 Pearl St., New York.
Parker, Charles W., Abilene, Kan.
Roovers Bros., 100 Schermerhorn St., Brooklyn, N. Y.
Roovers Mfg. Co., 10 W. 23d St., New York.
Rosenfield Mfg. Co., 587 Hudson St., New York.
Twentieth Century Vending Co., Flatiron Bldg., New York.
United States Automatic Weighing Machine Co., 35 Nassau St., New York.
Watling Mfg. Co., 155 W. Jackson Blvd., Chicago, Ill.
Wilmore Automatic Salesman Co., 1947 Broadway, New York.

189 VINEGAR MACHINERY.

Kaestner & Co., 241 S. Jefferson St., Chicago, Ill.

190 VOTING MACHINES.

Abbott Voting Machine Co., Hudson, Mich.
Fenton Metallic Mfg. Co., Jamestown, N. Y.
National Voting Machine Co., Adrian, Mich.
National Voting Machine Co., 160 Washington St., Chicago, Ill.
United States Standard Voting Machine Co., Rochester, N. Y.

191 WATER WHEELS.

Blymyer Iron Works Co., Cincinnati, O.
Doble, Abner, Co., Fremont & Howard Sts., San Francisco, Cal.
Cassel Auto. Water Motor Co., Seattle, Wash.
Hug, D., Denver, Col.
Knight & Co., Sutter Creek, Cal.
Leffel, Jas., & Co., Springfield, O.
Pelton Water Wheel Co., 133 Main St., San Francisco, Cal.
Risdon Iron & Locomotive Works, San Francisco, Cal.

192 TURBINE.

Allentown Foundry & Machine Works, Inc., Allentown, Pa.
Bartley, Wm., & Son, Bartley, N. J.
Baugher, Kurtz & Co., Ltd., York, Pa.
Blake, H., & Son, East Pepperell, Mass.
Bradway, C. P., Machine Works, West Stafford, Conn.
Camden Water Wheel Works, Camden, N. Y.
Chase Turbine Mfg. Co., Orange, Mass.
Christiana Machine Co., Christiana, Pa.
Davis Foundry & Machine Works, Rome, Ga.
Dayton Globe Iron Works Co., Dayton, O.
De Loach Mill Mfg. Co., Atlanta, Ga.
Dowling, Wm., & Co., Logansport, Ind.
Dubuque Turbine & Roller Mill Co., Dubuque, Ia.
Dunning, W. D., 329 W. Water St., Syracuse, N. Y.
Fell, Joseph E., Ogdensburg, N. Y.
Fales & Jenks Machine Co., Pawtucket, R. I.
Holyoke Machine Co., Holyoke, Mass.
Hunt, Rodney, Machine Co., Orange, Mass.

WATER WHEELS, TURBINE, continued

Jolly, J. & W., Holyoke, Mass.
Jones, E. D., & Sons, Co., Pittsfield, Mass.
Lane Mfg. Co., Montpelier, Vt. *See adv. page 97.*
Leffel, James, & Co., Springfield, O.
Milholland, J. & J. B., Pittsburg, Pa.
Nichols, Albert F., 157 Willis St., Lowell, Mass.
Norrish, Burnham & Co., Inc., Glen Rock, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Power Specialty Co., Buffalo, N. Y.
Putnam Machine Co., Fitchburg, Mass.
Ridgway, Craig, & Son, Coatesville, Pa.
Reading Foundry Co., Reading, Pa.
Risdon-Alcott Turbine Co., Mount Holly, N. J.
Robinson, A. J., Brentwood, N. H.
Sergeant Mfg. Co., Greensboro, N. C.
Smith, S. Morgan, Co., York, Pa.
Stilwell-Bierce & Smith-Vaile Co., Dayton, O.
Turbine Engineering Co., Whitehall Bldg., New York.
Trump Mfg. Co., Springfield, O.
Turners Falls Machine Co., Turners Falls, Mass.
United Iron Works, Oakland, Cal.
Valley Iron Works Co., Appleton, Wis.

193 WELL MACHINERY AND TOOLS.

Well Sinking Machines, Artesian Well Tools, Oil Well Tools, Earth Augers, etc.

Alamo Iron Works, San Antonio, Tex.
American Well Works, Aurora, Ill.
Armstrong Machine & Well Works Co., Welsh, La.
Austin Mfg. Co., Manhattan Bldg., Chicago, Ill.
Baker Iron Works, 932 Buena Vista St., Los Angeles, Cal.
Blakeslee Mfg. Co., Birmingham, Ala.
Blue Valley Mfg. Co., Manhattan, Kan.
Bovaird & Seyfang Mfg. Co., Bradford, Pa.
Collins, F. F., Mfg. Co., San Antonio, Tex.
Cook, A. D., Lawrenceburg, Ind.
Cyclone Drilling Machine Co., Orrville, O.
Davis, Geo. E., Dubuque, Ia.
Dempster Mill Mfg. Co., Beatrice, Neb.
Diamond Drill & Machine Co., Birdsboro, Pa.
Fort Scott Fdy. & Mch. Co., Fort Scott, Kan.
Howell, R. R., & Co., Minneapolis, Minn.
Keystone Driller Co., Beaver Falls, Pa.
Kelly & Taneyhill Co., Waterloo, Ia.
Knoxville Foundry & Machine Co., Knoxville, Tenn.
Loomis Machine Co., Tiffin, O.
National Drill & Mfg. Co. Pullman Bldg., Chicago, Ill.
Oil Well Supply Co., Pittsburg, Pa.
O'Leary, Arthur J., & Son, Co., 130 W. Lake St., Chicago, Ill.
Olmsted & Co., 100 N. Clinton St., Chicago, Ill.
Pech, Gus, Foundry & Mfg. Co., Le Mars, Ia.
Pierce Well Engineering & Supply Co., 136 Liberty St., N. Y.
Presler-Crowley Mfg. Co., 219 W. 2d St., Cincinnati, O.
Rumsey & Co., Seneca Falls, N. Y.
St. Louis Well Machine & Tool Co., St. Louis, Mo.
Sherman Iron Works, Sherman, Tex.

WELL MACHINERY, continued

Sparta Iron Works Co., Sparta, Wis.
Star Drilling Machine Co., Akron, O.
Struthers-Wells Co., Warren, Pa.
Taylor & Co., Inc., 415 Driggs Ave., Brooklyn, N. Y.
Trowbridge, A. R., Kalamazoo, Mich.
Williams Bros., Ithaca, N. Y.

194

WINDMILLS.

Aera Mfg. Co., Henry, Ill.
Aeromotor Co., 12th & Rockwell Sts., Chicago, Ill.
Althouse-Wheeler Co., Waupun, Wis.
Anderson Malleable Iron & Mfg. Co., Anderson, Ind.
Appleton Mfg. Co., Batavia, Ill.
Bagley Co., Ellicott Sq., Buffalo, N. Y.
Baker Mfg. Co., Evansville, Wis.
Baltimore Cooperage Co., Baltimore, Md.
Banks, T., & Son, Burlington, Wis.
Batavia Windmill Co., Batavia, Ill.
Beckman Bros., Des Moines, Ia.
Butler Co., Butler, Ind.
Caldwell, H. W., & Co., Western Ave. & 17th St., Chicago, Ill.
Caldwell, W. E., Co., Louisville, Ky.
California Wind Mill Co., Somonauk, Ill.
Carter Windmill & Tank Co., Des Moines, Ia.
Challenge Wind Mill & Feed Mill Co., Batavia, Ill.
Chandler Pump Co., Cedar Rapids, Ia.
Church, Stephens B., Seymour, Conn.
Collins, F. F., Mfg. Co., San Antonio, Tex.
Colton, G. D., & Co., Galesburg, Ill.
Corcoran, A. J., 11 John St., New York.
Corcoran, W. A., Windmill Co., 200 Broadway, New York.
Cornish, Curtis & Greene Mfg. Co., Fort Atkinson, Wis.
Cypress Tank Co., 355 Madison St., Mobile, Ala.
Dempster Mfg. Co., Des Moines, Ia.
Dempster Mill Mfg. Co., Beatrice, Neb.
Duplex Mfg. Co., South Superior, Wis.
Elgin Wind Power & Pump Co., Elgin, Ill.
Enterprise Wind Mill Co., Sandwich, Ill.
Fairbury Iron Works & Wind Mill Co., Fairbury, Neb.
Flint & Walling Mfg. Co., Kendallville, Ind.
Foos Mfg. Co., Springfield, O.
Freeland Mfg. Co., Niles, Mich.
Freeman, S. S., & Sons Mfg. Co., Racine, Wis.
Genoa Mfg. Co., Genoa, O.
Goodhue Rotary Grinder Co., St. Charles, Ill.
Heller, Aller & Co., Napoleon, O.
Hirsch Bros., 267 Reed St., Milwaukee, Wis.
Horicon Wind Mill Co., Horicon, Wis.
Howe Engine Co., Indianapolis, Ind.
Iowa Windmill & Pump Co., Cedar Rapids, Ia.
Jager, Chas. J., Co., 174 High St, Boston, Mass.
Kregel, G. F., Nebraska City, Neb.
Lamb & Co., Freeport, Ill.
Lansing Motor & Pump Co., Lansing, Mich.
Leach Windmill Co., Joliet, Ill.
Lockwood Tubular Wells Machine Co., Peoria, Ill.

WINDMILLS, continued

Lowell Windmill Mfg. Co., Salina, Kan.
McDaniel & Son, Litchfield, Ill.
Marcy, R. G., Mfg. Co., Bluffton, Ind.
Marseilles Mfg. Co., Marseilles, Ill.
Mast, Foos & Co., Springfield, O.
Maud, S., Windmill & Pump Co., Lansing, Mich.
May Bros., Galesburg, Ill.
Medina Mfg. Co., Medina, O.
Moline Pump Co., Moline, Ill.
Mt. Pulaski Windmill Co., Mt. Pulaski, Ill.
National Engineering Co., Saginaw, Mich.
New Doty Mfg. Co., Janesville, Wis.
Pacific Pump & Windmill Co., San Francisco, Cal.
Perkins Windmill & Axe Co., Mishawaka, Ind.
Peters Pump Co., Kewanee, Ill.
Phelps & Bigelow Windmill Co., Kalamazoo, Mich.
Pierce Well Engineering & Supply Co., 136 Liberty St., N. Y.
Porter, J. E., Co., Ottawa, Ill.
Red Cross Mfg. Co., Bluffton, Ind.
Rose, F. M., & Son, Oakland, Cal.
Sharp Mfg. Co., Albert Lea, Minn.
Smith & Pomeroy, Kalamazoo, Mich.
Snow Mfg. Co., Batavia, Ill.
Snow Windmill Co., Geneva, Ill.
Standard Mfg. Co., Galesburg, Mich.
Stehn Mfg. Co., Sheboygan, Wis.
Stover Mfg. Co., Freeport, Ill.
Superior Co., Streator, Ill.
Tanner, D. F., Holland, N. Y.
Temple Pump Co., 17 W. 15th Pl., Chicago, Ill.
United States Wind Engine & Pump Co., Batavia, Ill.
Vail & Smith, Weston, Mich.
Walterschied Bros., Wichita, Kan.
Wells, H. B., & Son, Ithaca, Mich.
Williams Mfg. Co., Kalamazoo, Mich.
Winter, F. W., & Co., Faribault, Minn.
Wolcott Windmill Co., Saginaw, Mich.
Woodin & Little, 312 Market St., San Francisco, Cal.
Woodmanse Mfg. Co., Freeport, Ill.
Zimmerman Mfg. Co., Auburn, Ind.

195 WINDOW OPENING DEVICES.

Drouve, G., Co., Bridgeport, Conn.
Ormsby, E. A., Melrose, Mass.

MECHANICAL INDEX
ADVERTISING SUPPLEMENT

SECTION I

MACHINE SHOP EQUIPMENT

and

Electrical Supplies

SEE ALPHABETICAL INDEX FOR
ADVERTISERS PAGE NUMBERS

CATALOG

and PRICE LIST

on application.

Grinding Machines,
Tool Grinding Machines,
Automatic Knife Grinding Machines,
Automatic Surface Grinding Machines

Hand Surface Grinding Machines,
Face Grinding Machines,
Face and Angle Grinding Machines,
Car Box Grinding Machines,

Bench Tool Grinding Machines for water,
Twist Drill Grinding Machines,
Double Head Face Grinding Machines,
Ball Case Grinding Machines,

Tobacco Knife Grinding Machines,
Cigarette Knife Grinding Machines,
Gun Barrel Reaming Machines,

Five and Nine Wheel Grinding Machines,
Saw Gumming and Saw Sharpening Machines,
Huntington Grinding Machines,
Swing Frame Grinding Machines,

Lathe Centre Grinding Machines,
Lever and Screw Feed Hand Lathes,
Bench Lathes, Spinning Lathes,
Lathe Grinding Attachments,

Polishing or Buffing Machines,
Belt Strapping Machines and Attachments,
Wood Polishing Wheels,

Emery Wheels,
Polishers' Supplies, Etc.

1904

DIAMOND MACHINE CO.

Providence, R. I., U. S. A.

Brown & Sharpe Mfg. Co.

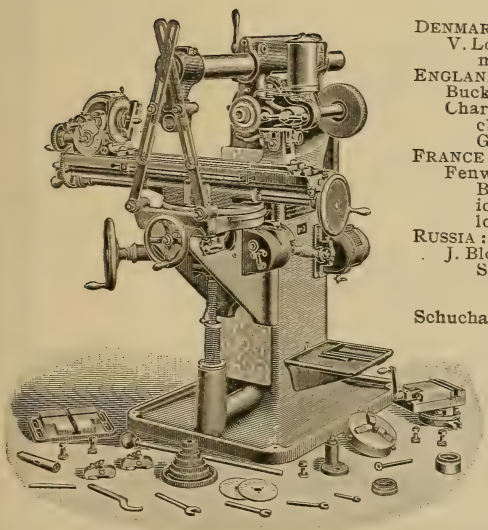
PROVIDENCE, R. I., U. S. A.

Established 1833

Incorporated 1868.

MACHINERY AND TOOLS.

Milling Machines,
Grinding Machines,
Automatic Gear Cutting Machines,
Screw Machines,
Milling Cutters,
Machinists' Tools,
Measuring Tools.



Foreign Representatives:

DENMARK:
V. Loewener, Copenhagen; also, Sweden; Malmö and Stockholm.

ENGLAND:
Buck & Hickman, London.
Charles Churchill & Co., Ltd., London, Manchester, Birmingham, Newcastle; Scotland, Glasgow.

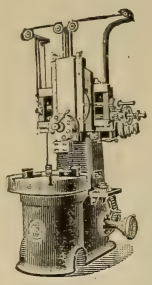
FRANCE:
Fenwick Freres & Co., Paris; also, Belgium, Brussels; Italy, Milan; Switzerland, Zurich and La Chaux-de-Fonds; Spain, Barcelona.

RUSSIA:
J. Block Co., Moscow, Ekaterinburg, Warsaw, St. Petersburg.

For Small Tools and Cutters only:

Schuchardt & Schutte, Berlin and Cologne, Germany; Vienna, Austria; Brussels, Belgium, Stockholm, Sweden; St. Petersburg, Russia.

Catalogue Mailed, Without Charge, to any address.

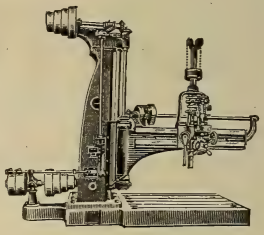


Our 30-inch Boring and Turning Mill

Has a 10-inch swivel turret head which can be set to any angle up to 30 degrees. Capacity 30 inches diameter and 15½ inches under the cross rail. Has sixteen changes of speed. Is available for different kinds of work, covering a much wider range than a lathe of the same capacity, and occupies much less room in the shop.

Our Radial Drill

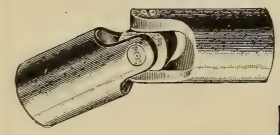
Has arm suspended on roller and ball bearings. Counter shaft attached. Belt or gear drive. Built with or without tapping attachment.



For Revolving a Shaft

outside a straight line

Our Universal Joint



Has no equal. It is strong, durable, simple in construction. Made of bronze or steel; can be worked on a single joint to a limit of 30 degrees.

Send for a set of our Folders; gives full information about **the special points** of advantage of our products.

Baush Machine Tool Company,

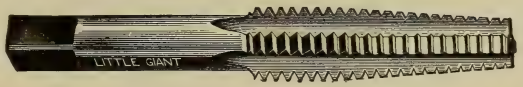
Springfield, Mass., U. S. A.

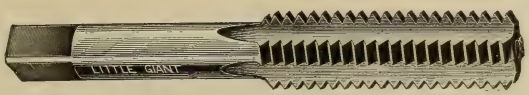
AMERICAN AGENTS: Manning, Maxwell & Moore, New York, Chicago, Philadelphia, Boston, Cleveland and Pittsburg.

FOREIGN AGENTS: Selig, Sonnenthal & Co., London. Chas. Churchill & Co., Ltd., London, Birmingham, Glasgow, Manchester and Newcastle-on-Tyne. Fenwick Freres & Co., Paris, France.

"LITTLE GIANT" TAPS, DIES, SCREW PLATES.

We make and carry in stock a full line of Screw Cutting Tools which are unsurpassed for durability, convenience, design and finish. Our Dies are made from best flat steel and are rigid as solid dies, yet easily adjusted. Taps and Dies of unusual thread and odd dimensions furnished to order. Each assortment of Screw plates put up in a neat wooden case with adjustable tap wrench holding all sizes of taps. Perfect threads at one cut with these screws plates. Send for latest Catalog of "Little Giant" tools.



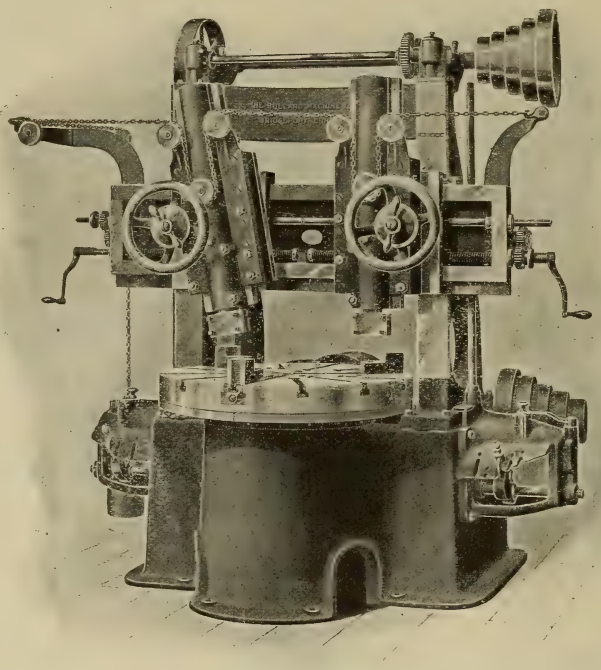


WELLS BROTHERS COMPANY,

GREENFIELD, MASS., U. S. A.

Boring and Turning Mills

30 INCH TO 76 INCH CAPACITY.



37 INCH BORING MILL, MOTOR DRIVEN.

ALL IMPROVEMENTS. UP-TO-DATE DESIGN.

ALL GEARS CUT.
ALL FEEDS POSITIVE.
ALL MILLS SELF-CONTAINED.

The Bullard Machine Tool Company,

Bridgeport, Connecticut, U. S. A.

New York Office and Show Rooms, No 139 Liberty St. Marshall & Huschart Machinery Co , Chicago Cleveland, Cincinnati. Brown & Zortman Machinery Co.. Pittsburgh, Pa. Ludw. Loewe & Co , Ltd., 30-32 Farringdon Road, London, England. Schuchardt & Schutte, Berlin, Cologne, Vienna, Brussels, Stockholm, St. Petersburg.

Betts Machine Company,

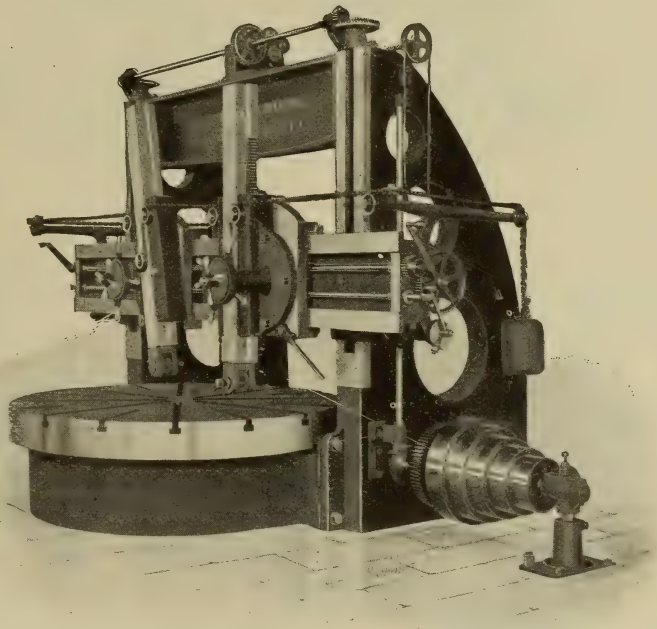
Wilmington, Del., U. S. A.

Makers of

...Heavy Machine Tools...

of the

Most Advanced Types.



Vertical Boring and Turning Mills,

From 5 ft. to 20 ft. Swing.

Horizontal Boring and Drilling Machines,

Usual Sizes.

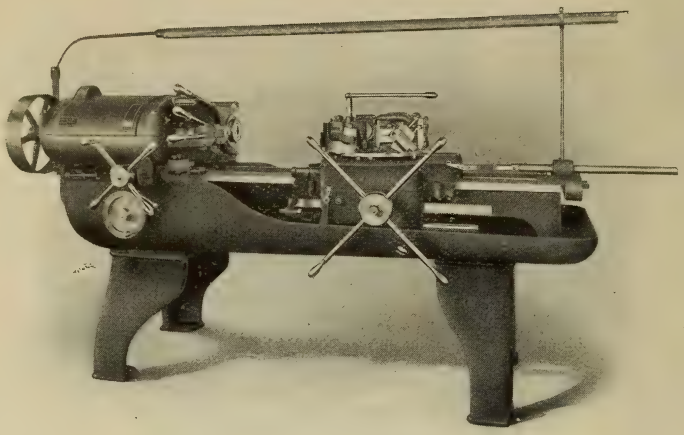
Planers,

from 3 ft. sq. to 10 ft. sq.

Slotters,

from 8 in to 24 in. Stroke.

The New
Flat Turret Lathe



A machine for rapidly and accurately doing lathe work, and equipped with a full set of instantly adjustable tools, for turning and screw threading nearly every conceivable shape within its working dimensions.

Now made in two sizes—2 x 24 and 3 x 36. Capacities without special features—up to 2¼″ in diameter and 24″ in length when working from full length bars for the smaller machine, and up to 3″ in diameter and 36″ in length for the larger; chucked work up to 12″ diameter and 14″ diameter respectively.

MADE BY

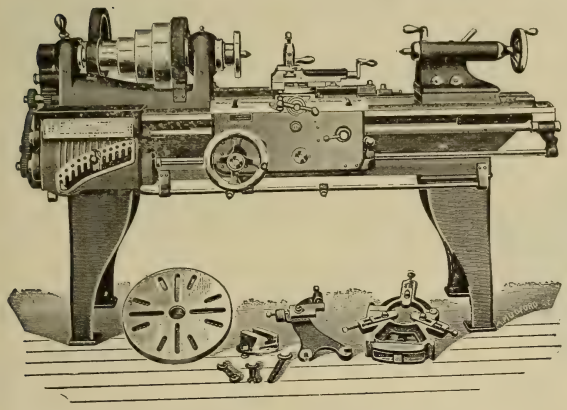
Jones & Lamson Machine Company

Springfield, Vermont, U. S. A. and
97 Queen Victoria St., London, E. C.

Germany, Holland, Belgium, Switzerland, Austria-Hungary, M. Koyemann, Charlottenstrasse, 112, Dusseldorf. France and Spain, Ph. Bonvillain, 6 Rue Blanche, 6 Paris. Italy, Adler & Eisenschitz, Milan.

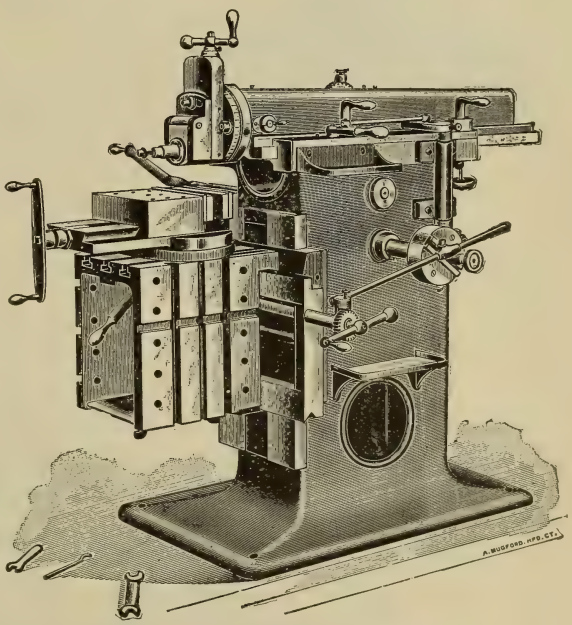
HENDEY-NORTON LATHES and HENDEY PILLAR SHAPERS

Stand at the head of their class. Superior in design and workmanship. Unequaled in capacity for work.



The **Hendey-Norton** Lathe is heavily and strongly built and is capable of more work, accurately turned, than any lathe on the market. Among the advantageous features of this machine is the NORTON SYSTEM OF INCORPORATED CHANGE GEARING which gives all threads and feeds in daily use. The TRAVEL OF CARRIAGE IN EITHER DIRECTION is reversed by handle at side of apron, which is ALWAYS within reach of the operator. This admits of TWO driving speeds from countershaft and prolongs life of belts by doing away with countershaft reversals. *The Automatic Stop, besides being an Element of Safety, is Almost Indispensable* in threading or boring to shoulders, and also saves time in turning duplicate pieces to length.

The PATENT FRICTION DRIVING MECHANISM in a Hendey Shaper affords power of stroke (in excess even of driving power of belts,) certainty of stroke in length under cut, and one which can be instantly changed in length or position, from fullest extent to minimum, with machine constantly in motion. In connection with the stroke a valuable little attachment is the MICROMETER ADJUSTMENT for cutting end. Allows spacing to a nicety, also shaping out work to irregular lines, etc. All the ESSENTIALS OF A GOOD SHAPER combined in this tool.



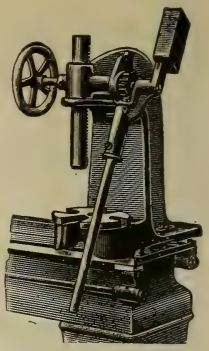
SEND FOR DESCRIPTIVE CATALOGUE.

THE HENDEY MACHINE CO., Torrington, Conn., U. S. A.

UNITED STATES AGENTS: Hill, Clarke & Co., Boston. Manning, Maxwell & Moore, New York and Chicago. J. W. Cregar Agency, Philadelphia. Syracuse Supply Co., Ltd., Syracuse, N. Y. Baird Machinery Co., Pittsburg. Pacific Tool and Supply Co., San Francisco. The Scott Supply and Tool Co., Denver, Col. W. M. Pattison Machinery Co., Cleveland. J. W. Wright & Co., St. Louis. Smith-Courtney Co., Richmond, Va. W. P. Davis Machine Co., Rochester, N. Y. J. L. Osgood, Buffalo. Carey Machinery and Supply Co., Baltimore, Md. Robert Gardner & Son, Montreal, Canada.

EUROPEAN AGENTS: Chas. Churchill & Co., London, for Great Britain. Stussi & Zweifel, Milan, for Italy. Schuchardt & Schutte, for other European countries.

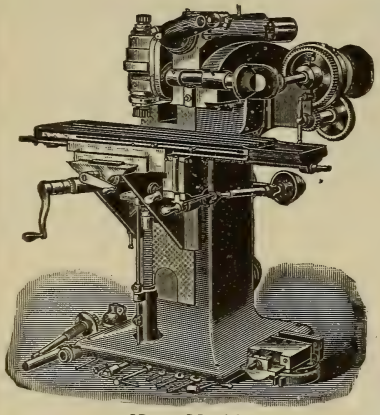
The Greenerd Arbor Press



Saves Room. *Saves Time.* *Saves Money.*

Used by the leading manufacturers in the country and sold by the principle dealers everywhere. Made in 8 sizes. Write us for particulars

E. E. BARTLETT, 368 ATLANTIC AVE., BOSTON, U. S. A.



No. 2 Machine.

VAN NORMAN DUPLEX MILLING MACHINES

with movable cutter head, are adapted for all kinds of milling, either vertical, horizontal or angle. They are invaluable for tool, gauge or fixture work, and for general all-around milling purposes. We have 3 sizes on the market.

Send for catalog of milling machines, and if you use bench lathes for fine work, ask for catalog of Van Norman Universal Bench Lathes.

WALTHAM WATCH TOOL COMPANY,

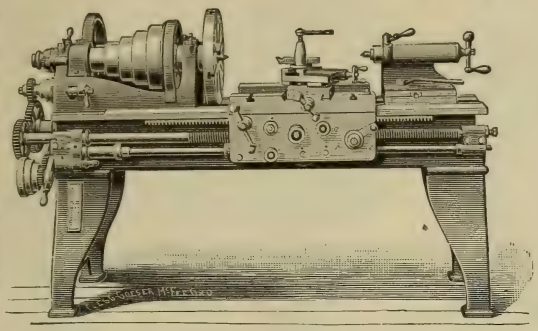
SPRINGFIELD, MASS.

The Strong, Carlisle & Hammond Co.

Machine Tools

CLEVELAND, OHIO, U. S. A.

Bradford Engine Lathes.



18 IN. X 6 FT. BRADFORD LATHE.

..FOR..

TOOL

ROOM

....OR....

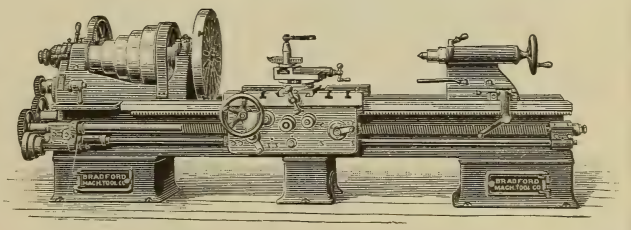
Manufacturing.

These lathes have a perfectly Ground Spindle of High Carbon Hammered Crucible Steel, with hole bored from the solid, and journals running in Adjustable Hard Bronze Boxes of the Taper Pattern. By reason of the operator having command of a quick and certain adjustment for the most important part of his machine, these 14 in., 16 in., and 18 in. Lathes make a valuable tool both for Tool Room and Factory alike, on account of their extreme precision.

Our larger lathes have the same substantial construction; convenient, modern and practical.

WRITE FOR CATALOGUE

Engine Lathes.

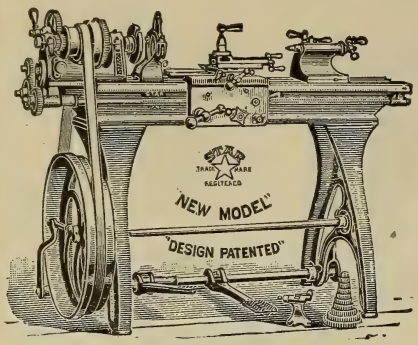


28 IN. X 12 FT. BRADFORD LATHE.

BRADFORD MACHINE TOOL COMPANY,

CINCINNATI, O., U. S. A.

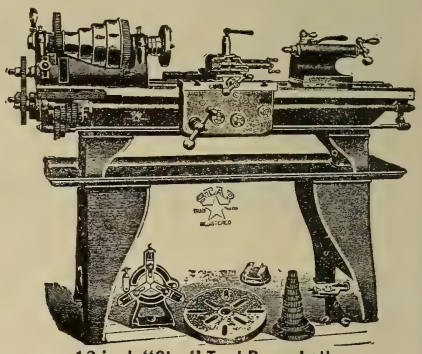
"Star" Foot and Power Lathes



9 and 11 inch "Star" Foot and Power Lathes.

Heavy, rigid, and above all else, accurate, suitable for electrical and repair work, toolmakers, gunsmiths, technical schools and any shop requiring fine, accurate work.
Send for catalog "B."

High grade Screw-Cutting Engine Lathes with power cross feed, either plain, compound or raise and fall rests, U. S. Standard, Whitworth or Metric Lead Screws. Also Draw-In Chuck, Gear-cutting, Milling and Taper Attachments.



13 inch "Star" Tool Room Lathe.

The Seneca Falls Manufacturing Company
368 Water Street, Seneca Falls, N. Y., U. S. A.

You can save from $500.00 to $1,200.00

per year by using a

Gridley Automatic Turret Lathe

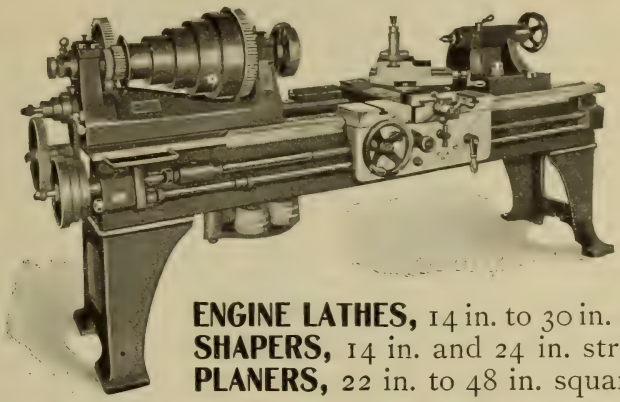
if you are now running two or more hand screw machines.

It is a full automatic machine, and it can be "set up" as quick as a hand machine. It is adapted to a wide range of work. The turning tools do not over-hang. Drills are supported close to the work. Taper and irregular shapes can be readily turned. The length of any cut can be changed without stopping the machine.

Write us for further information.

Windsor Machine Co., Windsor, Vt., U. S. A.

Flather Machine Tools.



ENGINE LATHES, 14 in. to 30 in. swing.
SHAPERS, 14 in. and 24 in. stroke.
PLANERS, 22 in. to 48 in. square.

All our tools are noted for their fine proportions, good material and workmanship.

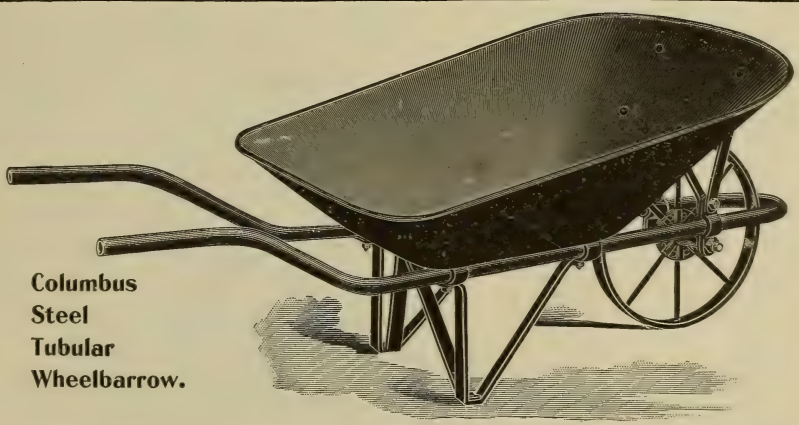
FLATHER & CO., Nashua, N. H., U. S. A.

AGENTS: Hill, Clarke & Co., Boston, Chicago and New York. The Garvin Machine Co., Philadelphia. Marshall & Huschart Machinery Co., Cleveland. Adolphe Janssens, Paris, Lille, Brussels. Chas. Churchill & Co., London, Birmingham, Manchester, Glasgow. V. Lowener, Copenhagen, Stockholm, Christiania. Hans, Richter, Berlin. Landre & Glinderman, Amsterdam.

THE KILBOURNE & JACOBS MANUFACTURING COMPANY,

LARGEST MANUFACTURERS IN THE COUNTRY OF ALL KINDS AND STYLES OF

Wheelbarrows, Scrapers, Plows, Etc.



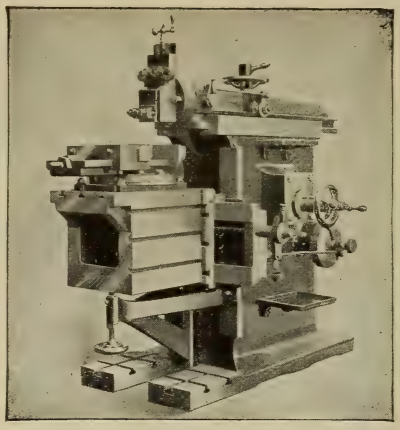
Columbus Steel Tubular Wheelbarrow.

We also make a full line of STEEL and WOOD DUMP CARS, and TRUCKS of all kinds.
WRITE FOR CATALOGUE.

THE KILBOURNE & JACOBS MANUFACTURING COMPANY, Columbus, Ohio.

SHAPERS.

We build a complete line of crank and back-geared crank shapers.



Ask for details of our special tool room-shaper with swivel box-table and index centres.

24 INCH SHAPER.

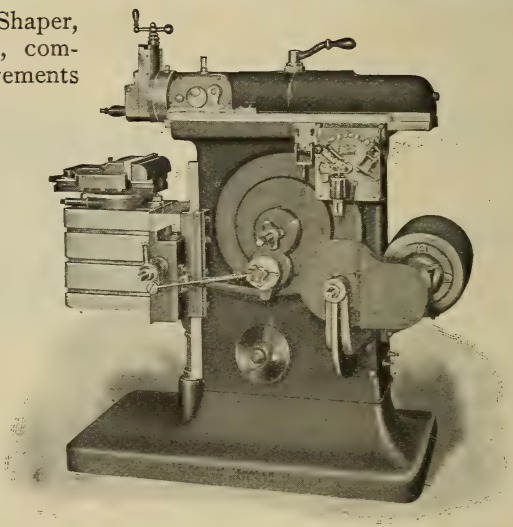
THE MARK FLATHER PLANER CO.,

NASHUA, N. H., U. S. A.

Something New in Shapers

The 16-inch Crank Shaper, shown in the engraving, combines all the latest improvements in Shaper construction, besides being fitted with our **Combination Crank Motion,** which is entirely new and essentially different from any other crank shaper. This motion gives the tool an even cutting speed with quick return of 4 to 1, with ample power. Belt or motor drive.

Write us for illustrated Circular.



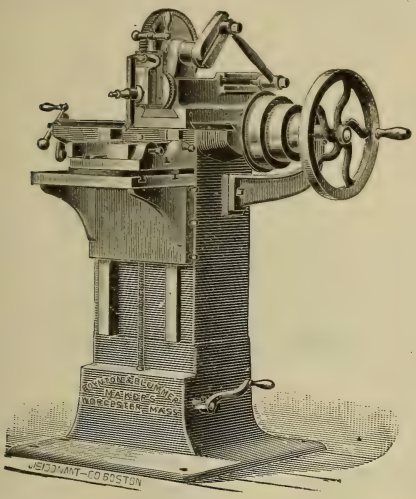
Stockbridge Shaper with motor drive

Stockbridge Machine Co., Worcester, Mass., U.S.A.

BOYNTON & PLUMMER,

WORCESTER, MASS., U. S. A.

MANUFACTURERS OF A GREAT VARIETY OF



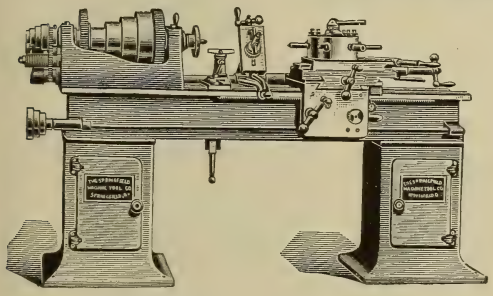
SHAPING MACHINES,
DRILLING MACHINES,
BOLT CUTTING MACHINES,
BOLT HEADING MACHINES,
TIRE BENDING MACHINES,
TIRE SHRINKING MACHINES,
PORTABLE FORGES,
ETC., ETC.

SEND FOR CATALOGUE.

SOLD BY FIRST CLASS DEALERS ALL OVER THE WORLD.

BRASS WORKERS' LATHES.

18 IN. FOX MONITOR.



Very Complete. Furnished with or without Clutch Head. Has Taper attachment. Left and right-hand threads cut with same leader. The **Turret** operated by **two** simple movements of **one hand.** **(Many other good things mentioned in circular about this machine.)** Used and bought by the Government, Railroads and Technical Schools.

Our Leaders: 36 in. and 42 in. LATHES.

Plain Back Geared and Triple Geared.

STRONG, HEAVY, PRACTICAL, MODERN.

Supplied with INDEPENDENT MOTOR if desired.

THE SPRINGFIELD MACHINE TOOL CO., SPRINGFIELD, OHIO, U. S. A.

GOULD & EBERHARDT, NEWARK, N.J., U.S.A.

DESIGNERS AND BUILDERS OF

HIGH CLASS MACHINE TOOLS.

Used by U. S. Government Navy Yards and Institutions, Technical Colleges and Leading Firms in all parts of the World.

EBERHARDTS' PATENT LATEST IMPROVED

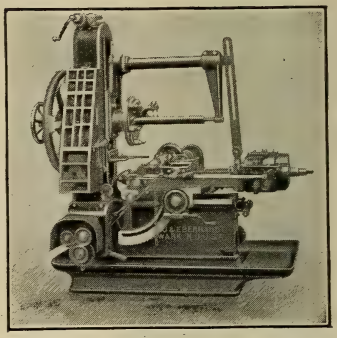
ENTIRELY AUTOMATIC GEAR AND RACK CUTTING MACHINES.

Accurate, Rapid, Substantial.

Unequalled for Accuracy and Rapidity of output, and justly considered the most advanced machines made.

14 SIZES AND STYLES FOR ALL PURPOSES.

We also cut or make complete all kinds of gearing including Spiral and Internal Gears.



Eberhardts' Patent

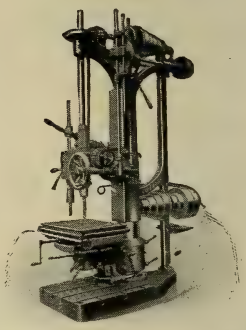
Upright Drill Press.

Furnished with or without patented Automatic Tapping Attachment shown, and with round or oblong Compound Traverse Table.

Rigid, Accurate, Long-Lived.

Possesses many patented conveniences not embodied in any other make.

25, 32, 37, 43, 48 AND 52-INCH SIZES.



Eberhardts' Patent

"DOUBLE TRIPLE QUICK" STROKE

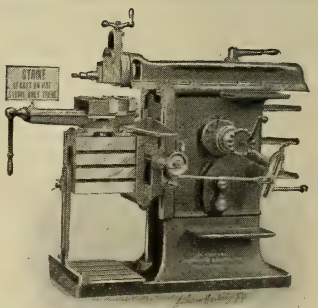
EXTENSION BASE SHAPER.

Patented "Double Triple Quick" Stroke enables double the number of strokes to be had over any other construction of shaper made.

Patented Extension Base and support to table insures rigidity when taking heavy cuts, and provides additional means for holding and manipulating work.

POWERFUL, ACCURATE, SUBSTANTIAL.

18 Styles and Sizes.



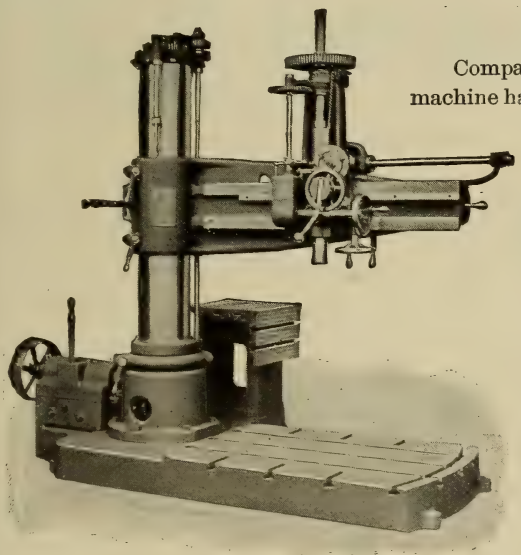
SELLING AGENTS: Manning, Maxwell & Moore, New York and Boston. Marshall & Huschart Mch'y Co., Chicago, Cleveland and Cincinnati. W. R. Colcord Mch'y Co, St. Louis. Henshaw. Bulkley & Co., San Francisco. U. Baird Machinery Co., Pittsburgh, Pa. The Fairbanks Co., Philadelphia.

WRITE FOR CATALOG.

This Little Booklet

Describes in detail
the many superior features
of the

New Bickford Radial.



The New Bickford Radial.

Compared with other radials this machine has twice as many speeds and from twice to four times as many feeds.

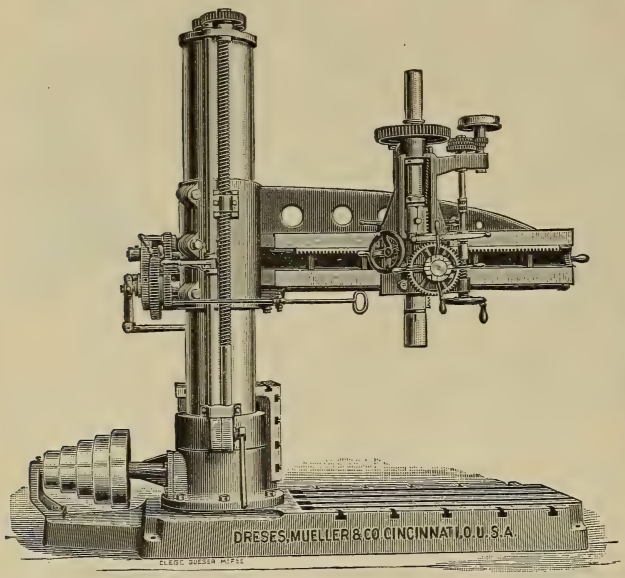
It is fitted with speed and feed boxes that give instantly any speed or feed with which the machine is provided, a dial depth gauge for reading all depths from zero, also an automatic trip that can be set to operate at as many different points as there are depths to be drilled at one setting of the work.

This booklet is yours on request.

The Bickford Drill and Tool Co.

Cincinnati, Ohio, U. S. A.

RADIAL DRILLS

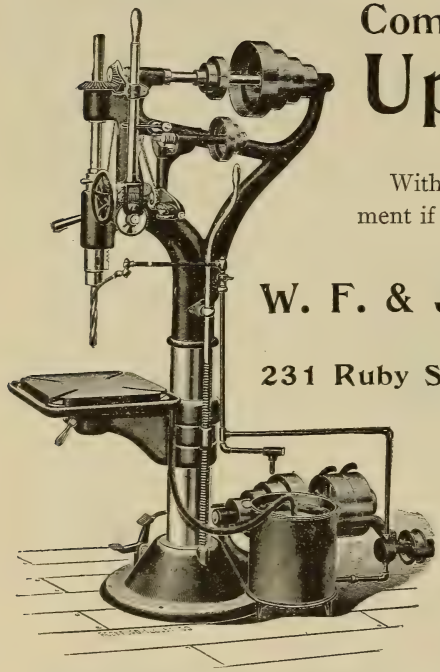


5 to 12 ft. Swing.

ALL STYLES.

Dreses Machine Tool Co.

Cincinnati, O. U. S. A.



20 in. Drill with an Oil Pump Equipment.

Complete Line of Upright Drills

8 in. to 50 in. Swing.

With or without back gear; oil pump attachment if wanted; ¼ turn countershaft if desired.

W. F. & JOHN BARNES CO.,

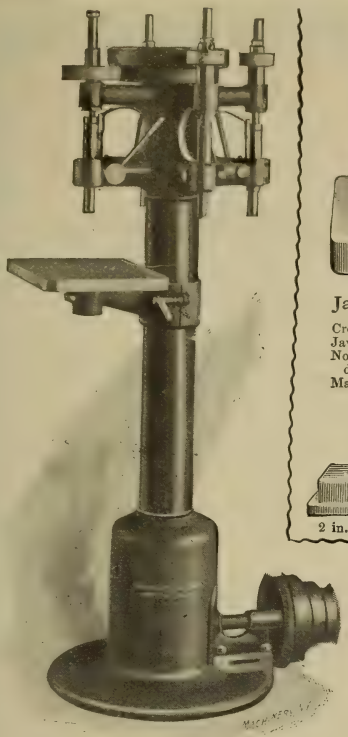
Estabiished 1872.

231 Ruby Street, Rockford, Ill.

We also make a complete line of

Foot Power Lathes

from 9 in. to 13 in. swing; with or without Compound Rest; countershaft instead of foot power. Your choice of two styles of foot motion.

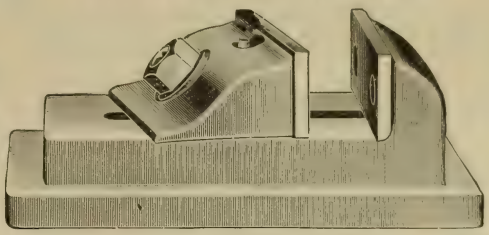


Four Spindle TURRET DRILL. Sensitive.

Four regular drill spindles on a Turret, each with its own speed and three changes. Work stationary and tools come to the work. Pushing on the foot lever, the Turret is entirely free to be revolved while the machine is running; releasing the foot, the first spindle over the center locks the Turret and is the only spindle running. Quick and handy tool for every shop.

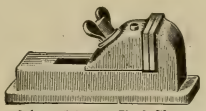
VANDERBEEK TOOL WORKS,
HARTFORD, CONN.

HANDY VISES.

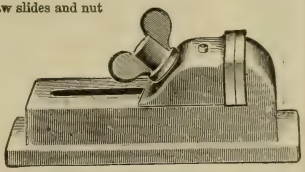


Jaws 6¼" long; open 4½". For Milling Machines, Etc.

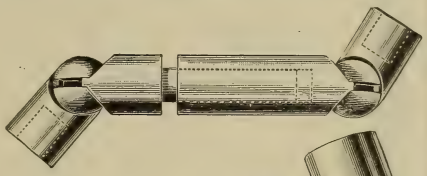
Crow-bar-leverage grip.
Jaws always stand parallel.
No crank handle or screw. Jaw slides and nut does clamping only.
Made swivel base or plain.

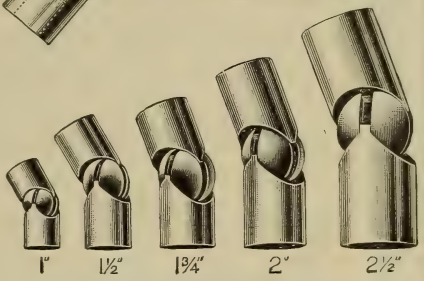


2 in. x 1 1-2 in. Tool Chest.



3 3-4 in. x 3 in. Drill Press, Etc.





WE MAKE ALL KINDS OF UNIVERSAL CONNECTIONS. UNIVERSAL JOINTS.

Lathes
Shears
Punches

W. C. Young Mfg. Co.

15 to 23 Hermon St.

Worcester, Mass., U.S.A.

....Write for Prices....

WHICH OF THESE CATALOGS INTEREST YOU?

They contain our Latest Types of Machine Tools.

Catalog No. 1.—Universal Milling Machines.

" No. 2.—Plain Milling Machines and Telegraphic Code.

" No. 3.—Vertical Milling Machines, Profiler Machines, and Duplex Milling Machines.

" No. 4.—Lincoln Milling Machines, Hand Milling Machines and No. 21 Milling Machine.

" No. 5.—and 6.— { Milling Machine Attachments. Dividing Heads, Inserted Tooth Cutters and Duplex Index Centers.

" No. 7.—No. 3 Universal Cutter and Tool Grinder, Nos. 1 and 2 Cutter Grinders and Surface Grinder.

" No. 8.—Screw Machines, Monitor Lathes, Forming Machines and Double Turret Screw Machines.

" No. 9.—Universal Screw Machines.

" No. 10.—Screw Machine Attachments.

" No. 11.—Tapping Machines, Screw Slotter, Die Slotter and Gang Drill Presses.

" No. 12.—Duplex Drill Lathes, Hand Lathes, Slide Rests and Spring Coilers.

" No. 13.—Friction Countershafts.

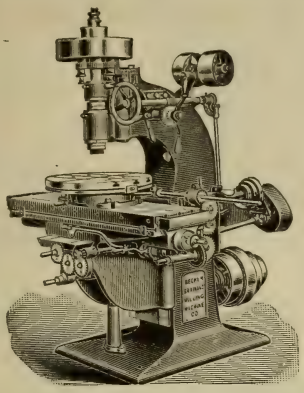
" No. 14.—Special Machinery and Index.

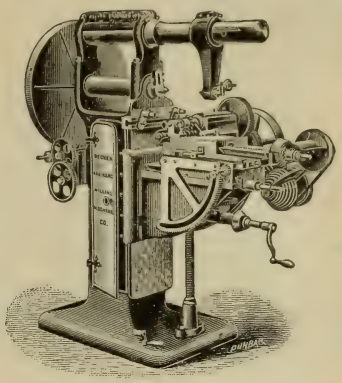
Pleased to send you one or all of the above on request, Free.

The Garvin Machine Company,

Spring and Varick Streets, NEW YORK.

PHILADELPHIA, STORE, 51 North 7th Street.





VERTICAL AND HORIZONTAL MILLING MACHINES

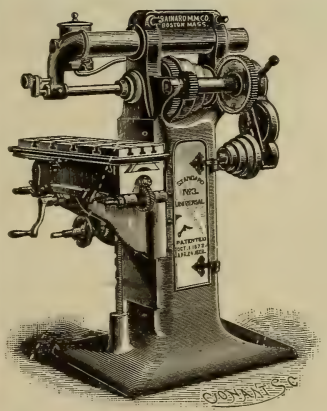
IN THE MOST COMPLETE LINE OF STYLES AND SIZES.

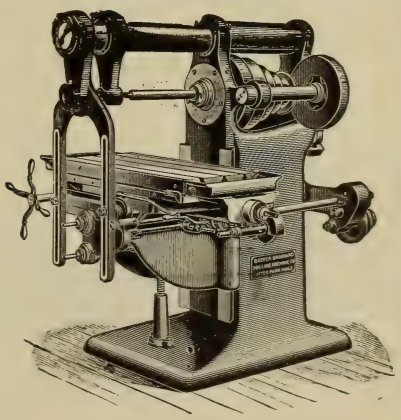
Automatic Gear Cutters, Milling Cutters, etc., etc.

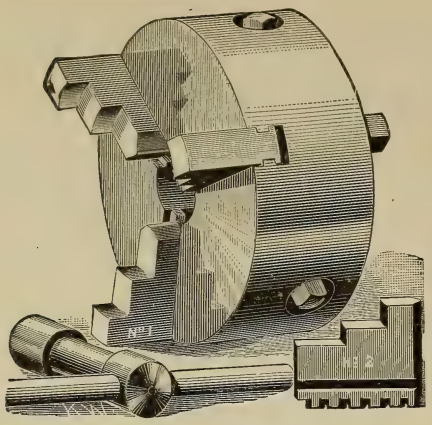
Built in the Largest Milling Machine Manufactory in the World.

BECKER-BRAINARD MILLING MACHINE COMPANY,

HYDE PARK, MASS, U. S. A.





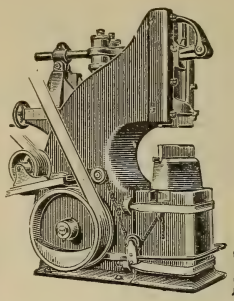


The Whiton Chucks

Are standard for severe duty.
Over 500 different kinds and sizes for all classes of work.
Send for Chuck Catalog

The D. E. Whiton Machine Co.

New London, Conn., U. S. A.



Do You Use Power Hammers?

If not, why not? Every Forge Shop should have one or more of

Kidder's Power Hammers.

It will pay you to investigate. Send for illustrated circular and descriptive price list.

R. E. KIDDER,
37 Hermon Street,
WORCESTER, MASS., U. S. A.

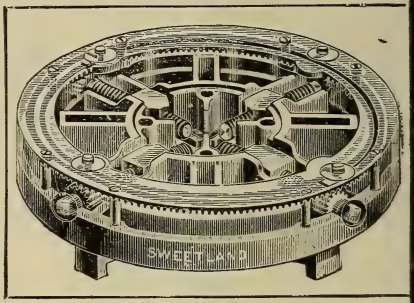
CHUCKS

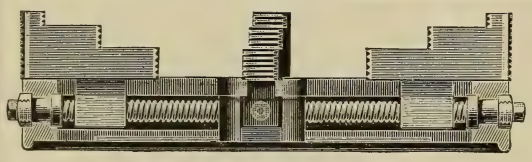
....THE....

SWEETLAND,

COMBINATION,
UNIVERSAL,
GEARED SCROLL,
INDEPENDENT,

ALL STYLES, ALL SIZES,





SIMPLE,
ACCURATE,
DURABLE,
GUARANTEED.

THE HOGGSON & PETTIS MFG. CO.,

NEW HAVEN, CONN., U. S. A.

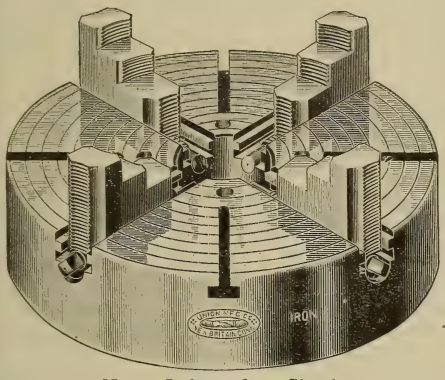
"CUSHMAN" CHUCKS.

ALL STYLES AND SIZES.
ALSO JAWS FOR FACE PLATES.

Manufactured by

THE CUSHMAN CHUCK CO., Hartford, Conn., U.S.A.

SEND FOR CATALOGUE.



No. 18 Independent Chuck.

Union Chucks.

A full line of Independent Chucks, made with both iron and steel bodies. Combination Chucks, with solid and reversible jaws. Universal Chucks, Geared Scroll Chucks, Face Plate Jaws, with both iron and steel bodies. Boring Mill Chucks, Milling Machine Chucks. Drill Chucks, three styles.

A LONG LINE OF CHUCKS FOR ALL CLASSES OF WORK.

MANUFACTURED BY

Union Manufacturing Co.,

New Britain, Conn., U. S. A.

Warehouse, 103 Chambers St., New York.

DIAMOND TOOLS

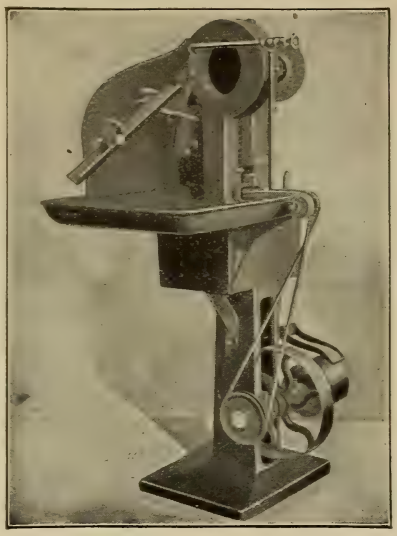
For Dressing, Turning and Shaping Emery, Corundum and Carborundum Wheels and for other mechanical uses.

Send for descriptive catalogue and price list.

THOS. L. DICKINSON

45 Vesey Street, New York City, U. S. A.

...ARE YOU LOOKING...



FOR THE

BEST DRILL GRINDER MADE?

IF SO BUY THE AMERICAN AND YOU WILL GET A MACHINE THAT IS HONESTLY BUILT, OF HONEST MATERIAL, AND AT AN HONEST PRICE.

ONE THAT IS SOLD ON ITS MERITS.

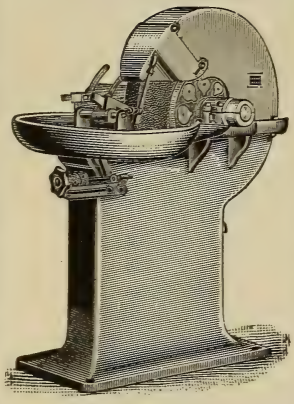
DO YOU NEED A **Center Grinder?** AGAIN THE AMERICAN HEADS THE LIST. OUR CATALOG SHOWS THE LARGEST AND BEST LINE OF

CENTER GRINDERS MADE.

HOW ABOUT THOSE **Cutters?** THE AMERICAN GRINDING ATTACHMENT IS A SMALL INVESTMENT BUT IT WILL GRIND YOUR REAMERS, CUTTERS, ETC., AND DO IT QUICK.

HEALD MACHINE CO.,
Worcester, Mass.

CHAS. CHURCHILL & CO., AGENTS,
LONDON, ENG.

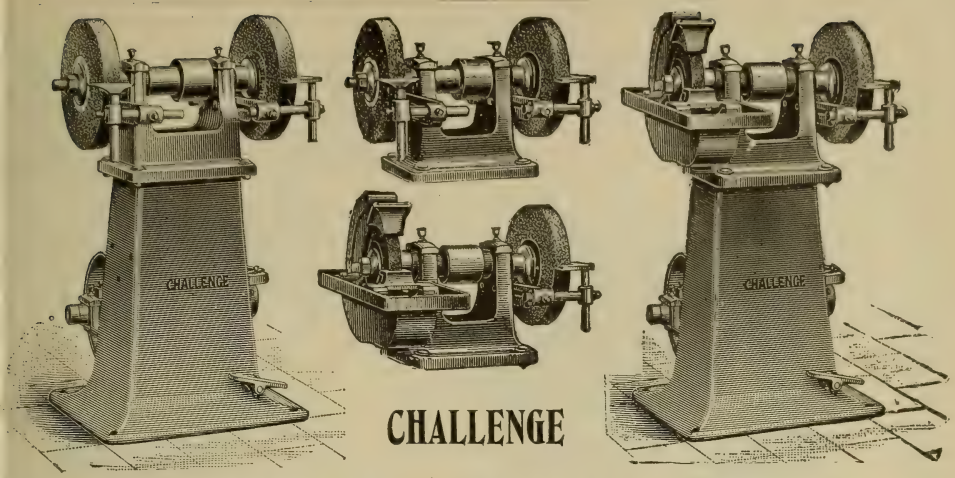


These Machines

save valuable time and pay for their cost each year over grindstones as a free gift.
Sold under a positive guarantee.
Self-locking Belt Shifter, fine adjustment and water regulation, and other features described in 1901 catalog.

We make a large line of high-grade Emery Wheels and Machinery—also Diamond Tools, all described in catalog.

Bridgeport Safety Emery Wheel Company,
Bridgeport, Connecticut, U. S. A.



CHALLENGE

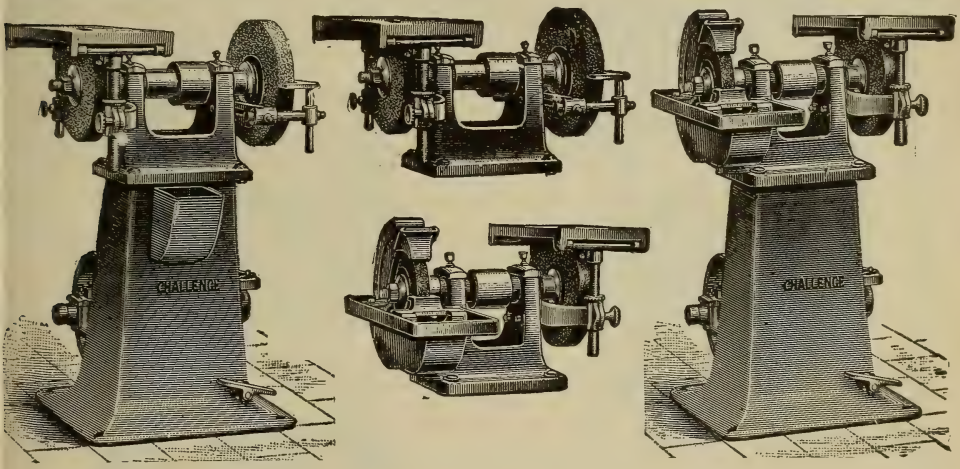
EMERY GRINDERS,

MANUFACTURED BY

CHALLENGE MACHINE CO. (Inc.)

ESTABLISHED 1886. PHILADELPHIA, U. S. A.

New Catalogue. Ask for it. Over 50 styles.

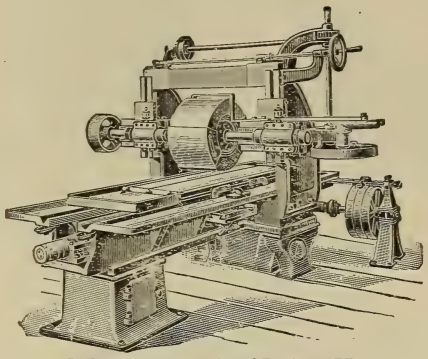


CHALLENGE DRESSER

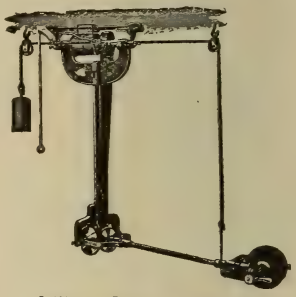
SAVES MORE THAN THE EMERY WHEELS COST.

SPRINGFIELD MANU-

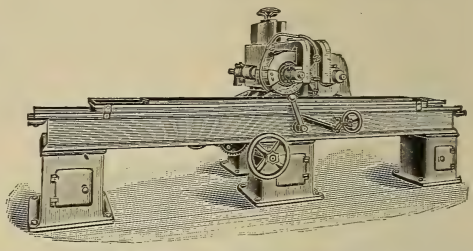
2403 to 2483 MOUNTAIN GROVE ST.,



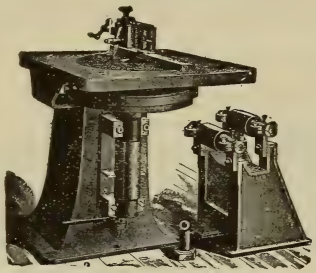
PLANER TYPE SURFACE GRINDER.
20 Varieties, 12 in. by 30 in,, up to
60 in. by 20 ft.—0 in.



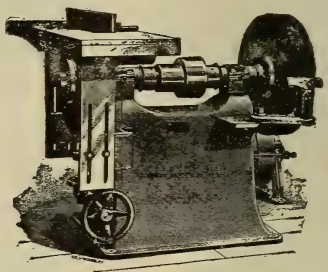
SWING FRAME GRINDERS.



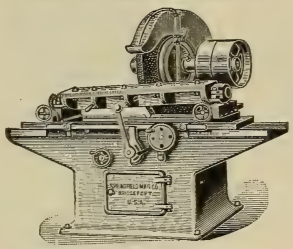
OPEN SIDE SURFACE GRINDERS.



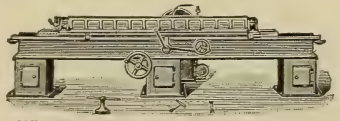
UPRIGHT SURFACE GRINDER.



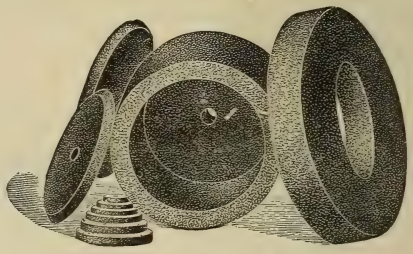
SURFACE GRINDERS. 20 Varieties.



AUTOMATIC KNIFE GRINDERS.
5 Varieties, 26 in. to 80 in.



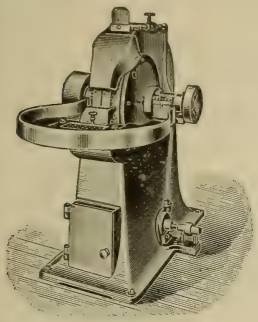
HEAVY PAPER AND SHEAR BLADE.
Automatic Knife Grinder,
60 in. to 160 in.



CORUNDUM AND EMERY WHEELS.

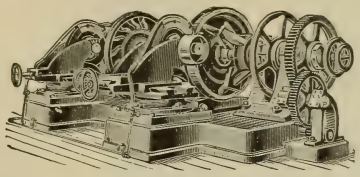
FACTURING COMPANY

BRIDGEPORT, CONNECTICUT, U. S. A.

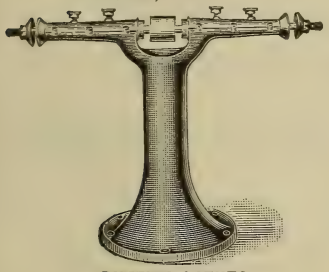


TOOL GRINDERS.
4 Varieties, 9 Sizes.

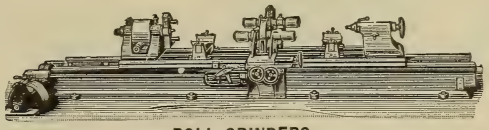
Manufacturers and Designers of Machinery Using Emery Wheels. Automatic and SPECIAL Designs on application. Also manufacturers of Corundum and Emery Wheels.



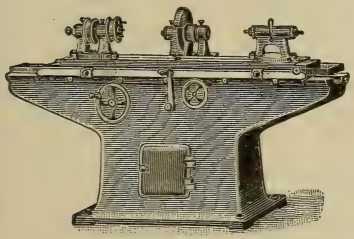
NO. 4 CAR WHEEL GRINDER.



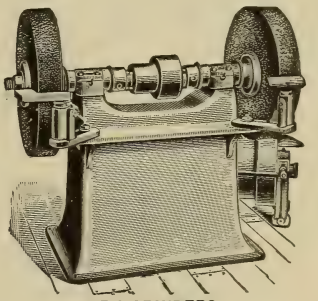
BUFFING LATHES.
10 Varieties and Sizes.



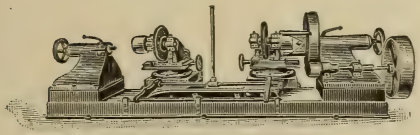
ROLL GRINDERS.
9 Sizes, 36 in. to 144 in.



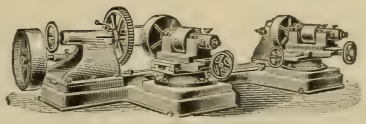
NO. 2 UNIVERSAL GRINDER.
8 Sizes, 26 in. to 120 in.



DRY GRINDERS.
20 Different Varieties and Sizes.

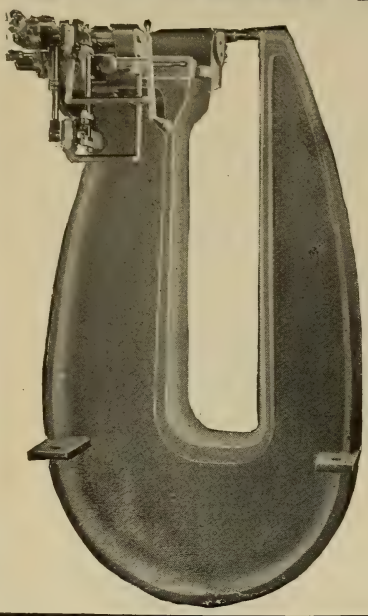


NO. 1 CAR WHEEL GRINDER.



NO. 3 CAR WHEEL GRINDER.

STEAM HAMMERS



250 lbs. to 10 tons falling weight.

Made with STEEL FRAMES for severe work.

PATENT

HYDRAULIC RIVETERS

FIXED AND PORTABLE TYPES.

PACKED WITH HEMP.

Hydraulic Cranes, Presses,
Accumulators, Pumps, Fittings.
Boiler Shop Equipments a specialty

CHAMBERSBURG ENGINEERING CO.,

CHAMBERSBURG, PA., U. S. A.

If you are in want of anything in the line of

DROP PRESSES OR HAMMERS

WRITE TO US.

We make a specialty of these machines, making them for all purposes.

If you are operating Hand Drops it would pay you to investigate the merits of the

PECK AUTOMATIC DROP LIFTER.

It will greatly INCREASE your OUTPUT and DECREASE your PAY ROLL.

We also manufacture BLAST FORGES for Drop Forgers.

MINER & PECK MFG. CO.,

PROPRIETORS OF

THE PECK DROP PRESS WORKS,

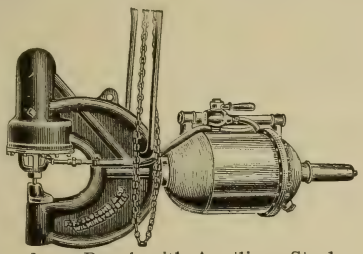
P. O. Box 424, NEW HAVEN, CONN.

FOR SHEET AND STRUCTURAL METAL WORK

.....THE.....

CASKEY PORTABLE PNEUMATIC PUNCH

STANDS ALONE



No. 3 Punch with Auxiliary Stroke.

So does the man that operates it. Because it is

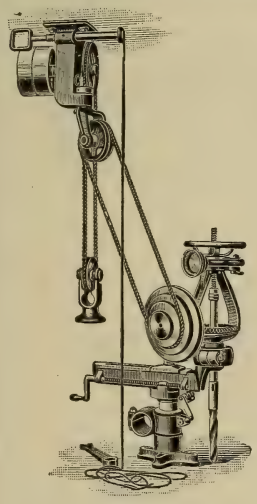
"The Only One Man Punch."

Can you afford to be without it?

SIMPLE,
COMPACT,
ACCURATE,
DURABLE.

For Catalog and Further information address:

F. F. SLOCOMB & CO., WILMINGTON, DEL.



Thos. H. Dallett & Co.,

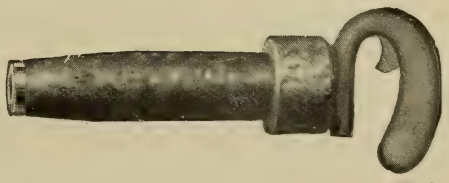
York Street and Sedgley Avenue, Philadelphia, Pa.

Manufacturers of

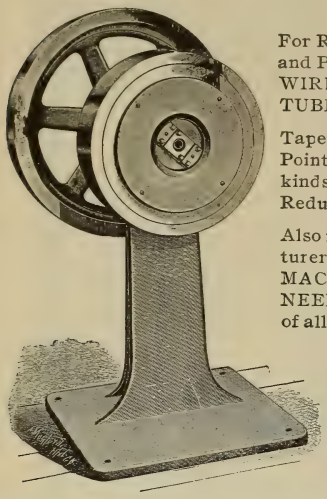
Rope Driven Portable Drills,
Electric Portable Drills,
Electric Boiler Shell Drills,
Electric Multiple Drills,
Electric Portable Reaming Machines,
Electric Portable Wood Planers,
Centre Grinding Machines,
Hand Drills.

Pneumatic Riveting and Chipping Hammers.

Send for full description.



DAYTON
SWAGING MACHINES



For Reducing and Pointing WIRE and TUBING.

Tapering and Pointing and all kinds of Reducing.

Also manufacturers of MACHINE NEEDLES of all kinds.

Send for Catalogue.

EXCELSIOR NEEDLE COMPANY,
TORRINGTON, CONN.

THE WATERBURY FARREL FOUNDRY AND MACHINE CO.

WATERBURY, CONNECTICUT, U. S. A.

DESIGNERS AND BUILDERS OF SPECIAL MACHINERY DESCRIBED IN CATALOGS.

A = Automatic Rivet Machines.
B = Hinge and Butt Machines.
C = Cartridge Machines.
E = Drop, Screw and Foot Presses.
G = Tube and Rod Drawing Machinery.
H = Hydraulic Machinery.
L = Spinning Lathes, Edging Lathes, etc.
M = Open Back, Single Acting Power Presses.
N = Pillar Single Acting Power Presses.
P = Double Acting Power Presses.
R = Rolling Mills.
S = Shears and Slitters.
T = Furnaces, etc.

Goodyear Wire Pointing and Reducing Machines

For pointing wire rods or wire for drawing

By Compression or Cold Swaging.

Also adapted for reducing, pointing and tapering a great variety of articles in metal.

For machines or information, write

S. W. Goodyear, Waterbury, Conn.

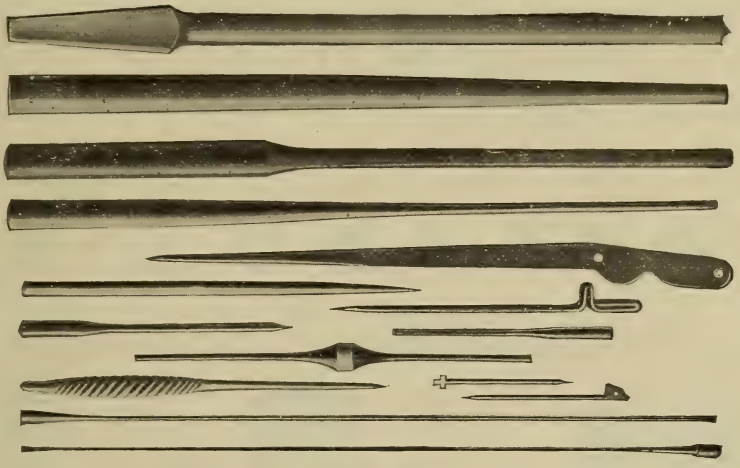
LANGELIER M'F'G. CO., PROVIDENCE, R. I., U. S. A.

Designers and Builders of

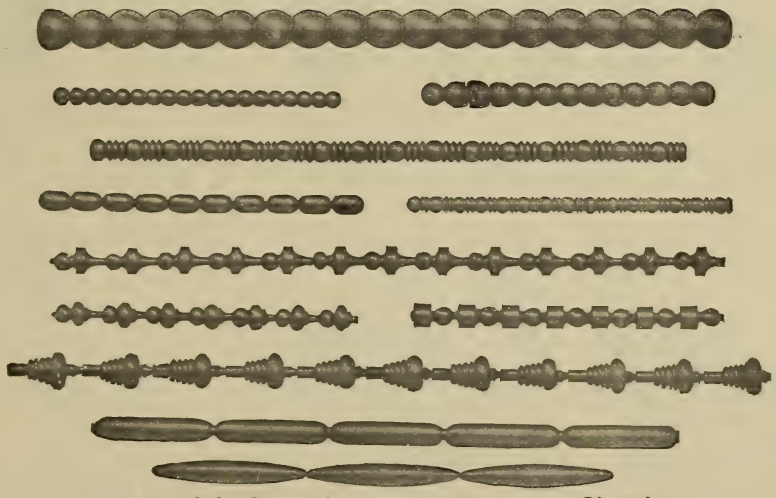
Special Machinery, Tools, Etc.

Multiple Drilling Machines for Wood and Metal, Sensitive Upright Drills. Reducing, Swaging and Hammering Machines. Bicycle Machinery, Jewelers' and Opticians' Machines and Tools.

COLD SWAGING AND HAMMERING PROCESS.
Samples made on our Swaging Machines.
Built in Eight Sizes.



Samples made on our Hammering Machines.
Built in Three Sizes.



Cuts and full particulars sent on application.

SELF CLOSING DUST PROOF OIL CUPS

Sectional View. Style G.

Style B. Closed.

For Machinery, Automobiles, Lathes, Drills, etc.

We make a full line of oil cups for all purposes and for all sorts of places. Special cups made to order. We also make Compression Grease Cups. Write for prices.

Style A. Closed.

Style D. Open View.

BOWEN MFG. CO., 20 First Ave., Auburn, N.Y., U.S.A.

BUTTERFIELD & CO.,

DERBY LINE, VERMONT, U. S. A.

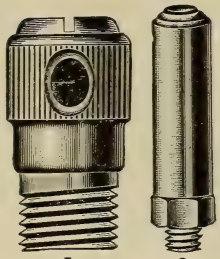
ROCK ISLAND, QUEBEC, Dominion of Canada.

Manufacturers of

TAPS AND DIES

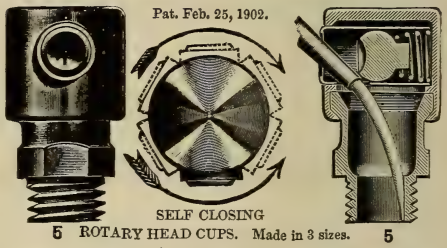
FOR ALL USES

Will Mail Catalogue for the Asking.


5 9 6 5

Self Closing Top Oilers.

MADE IN NINE SIZES.


Pat. Feb. 25, 1902.

SELF CLOSING

5 ROTARY HEAD CUPS. Made in 3 sizes. 5

OIL HOLE COVERS AND CUPS.

TWO PIECE COVERS. MADE IN FIVE SIZES.

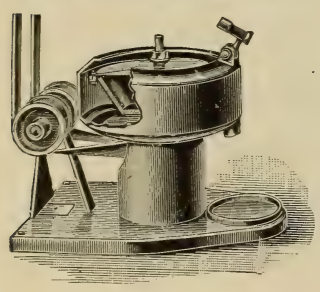
AUTOMATIC OPENING DIES. Our catalogue shows the family.

DUST PROOF, OIL TIGHT, WELL MADE AND PRICES RIGHT.

W. W. & C. F. TUCKER, HARTFORD, CONNECTICUT, U. S. A.

FOREIGN AGENTS: Buck & Hickman, London, England. Fenwick Freres, Paris, France.

COMBINED SEPARATOR AND FILTER



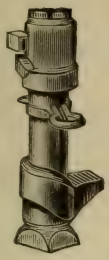
A PRACTICAL OIL SAVER

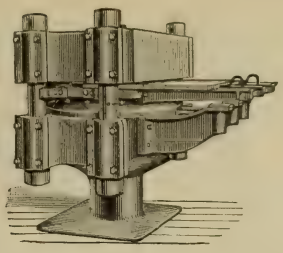
Does not require a skilled attendant.

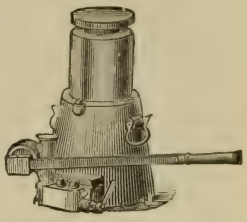
SEND FOR CATALOGUE AND PRICES.

National Separator and Machine Co.

Concord, N. H., U. S. A.







The Watson-Stillman Co.

46 Dey Street,
NEW YORK, U. S. A.

CHICAGO OFFICE,
453 ROOKERY.

Hydraulic Machinery.

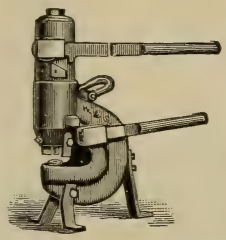
HYDRAULIC

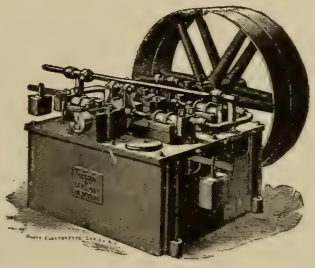
PRESSES,
PUMPS,
JACKS,

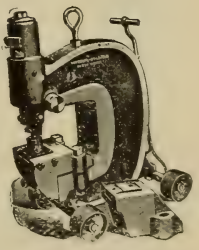
HYDRAULIC

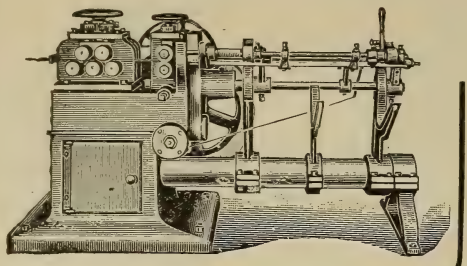
PUNCHES,
SHEARS,
RAIL BENDERS.

Valves and Fittings.







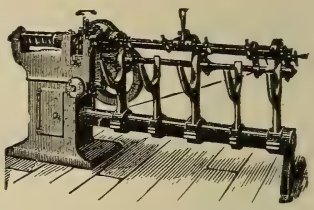


Our Automatic Strip Metal Cutting and Straightening Machine

straightens and cuts accurately, material up to ¼ inch thickness and from ½ inch to 4 inches wide into any length under 36 inches.

Other size machines to cut lengths up to 30 feet from material 12 inches wide and under.

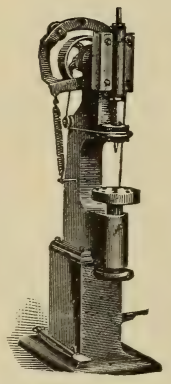
We also build



Automatic Wire Straightening and Cutting Machines

which straighten and cut accurately from 60 to 160 feet of wire from the coil every minute.

The Elastic Rotary Blow Riveting Machines



we build, are simple in construction, convenient and effective in operation, suitable for all classes of work requiring riveting. Heads both ends of a rivet at once.

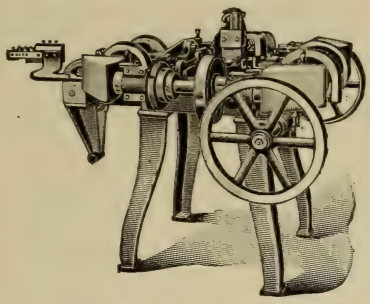
Manufacturers using strip metal or wire should have our catalog, containing interesting and valuable information about our Automatic Labor Saving Machinery.

Write for one.

THE F. B. SHUSTER COMPANY,

Formerly John Adt & Son,

NEW HAVEN, CONN.



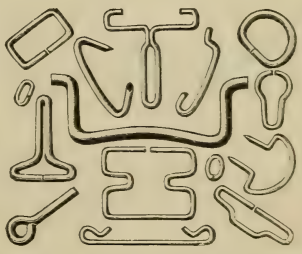
Automatic Wire and Metal Forming Machine.

The MANVILLE BROTHERS CO.

...Builders of...

Automatic Wire and Metal Forming Machinery.

29 Benedict St., Waterbury, Conn., U.S.A.



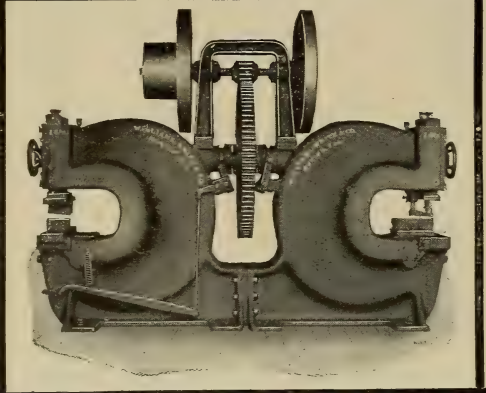
WILLIAMS, WHITE & COMPANY,

MOLINE, ILL., U. S. A.

MANUFACTURERS OF

THE BULLDOZERS,

ALL STYLES AND SIZES.



PUNCHES AND SHEARS,
DROP HAMMERS,
JUSTICE HAMMERS,
YEAKLEY VACUUM HAMMERS,
EYEBENDING MACHINES,
MULTIPLE PUNCHES AND GATE SHEARS.
TIRE WELDERS AND BENDERS.

CATALOG ON APPLICATION.

HOWARD IRON WORKS,

Manufacture a Full Line of

BURDICT BOLT MACHINERY

HEADERS, THREADERS, TAPPERS, NUTTERS,
...Also...
BOLT CUTTERS,

HOWARD IRON WORKS,

BUFFALO, NEW YORK.

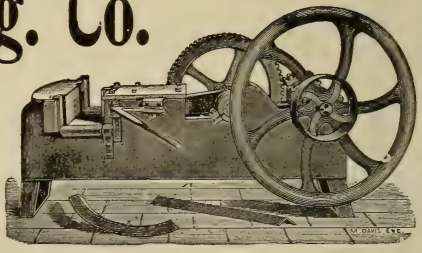
Pittsburgh Mfg. Co.

...Builders of ..

Crosgrove's Patent Straightening and Bending Machines.

Also Manufacturers of
Bolts, Nuts, Rivets, Castings, etc.

PITTSBURGH, PA.

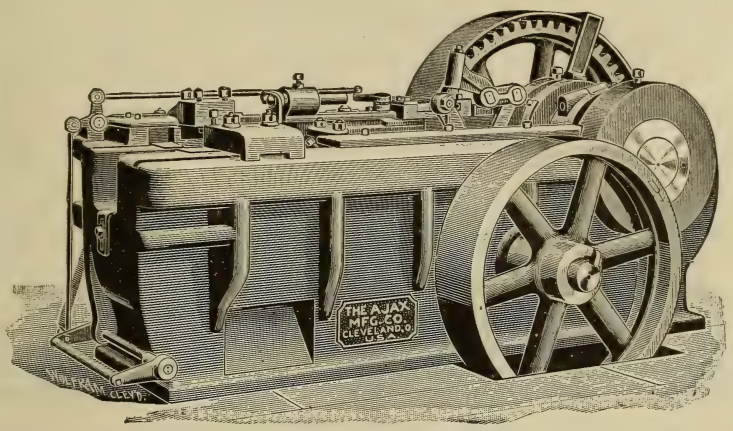


Straightening and Bending Machine.

The Ajax Mfg. Co.

Cleveland, Ohio.

CHICAGO OFFICE, 621 MARQUETTE BUILDING.



2 INCH FORGING MACHINE.

Manufacturers of

Bulldozers, all sizes and styles, fast and slow speed, single and double geared.

Forging Rolls, all sizes. Bolt Headers.

Rivet Headers. Upsetting Machines.

Forging Machines.

Hot Pressed Nut Machines.

Hot Forged Nut Machines.

Special Nut and Bolt Machinery.

WRITE FOR INFORMATION.

1830—1904

Seventy-four years' experience, and over 18,000 patterns of nothing but

Machine Knives.

Knives to suit every purpose.

Write, giving details to

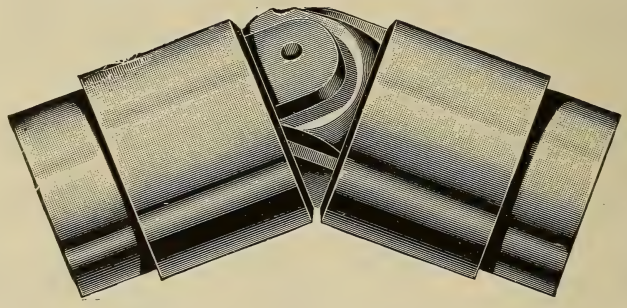
LORING COES & COMPANY, Inc.

Box 1, Station B, Worcester, Mass.

Mention the Index.

UNIVERSAL JOINTS

Eight Sizes—½ inch to 2½ inch diameter.



Strength and Wearing Qualities

are essential points in a Universal Joint. Ours are both strong and durable—the best on the market.

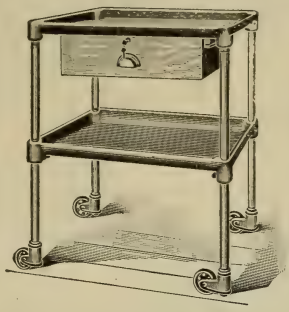
SEND FOR CIRCULAR "E."

The Gray & Prior Machine Co., Hartford, Conn. U. S. A.

Machine Shop Furniture

Money-making, Time-saving Shop Conveniences

Tool Racks
Lathe Pans
Lathe Racks
Bench Legs



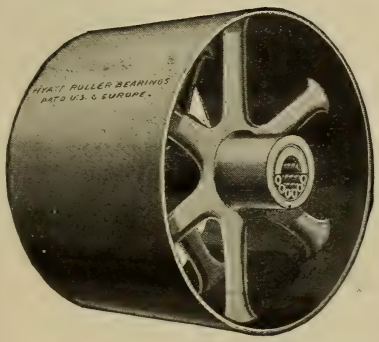
Steel Stock Racks
Tool Room Shelving
Revolving Screw Racks
Oil Feeders

Manufactured by

THE NEW BRITAIN MACHINE COMPANY

NEW BRITAIN, CONN., U. S. A.

Send for complete book showing Latest Designs.



HYATT ROLLER BUSHINGS.

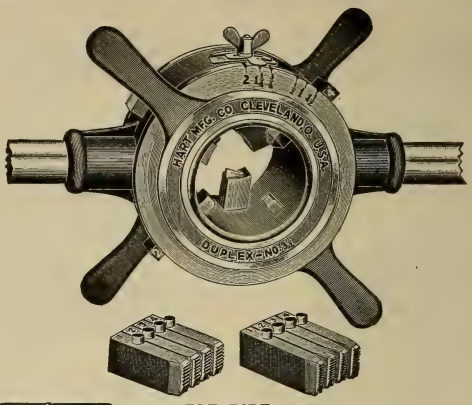
Especially adapted for loose pulleys; motor countershafts; special high speed machinery. Saving in power, lubrication and labor show a large return on the investment. Durability of the bearings guaranteed for a period of years.

Send for Bulletin No. 24 to the

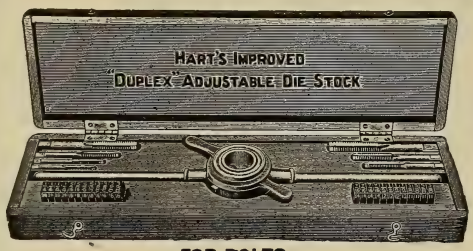
Hyatt Roller Bearing Company,

HARRISON, N. J., U. S. A.

Adjustable Die Stocks for Threading Pipe and Bolts.



FOR PIPE.



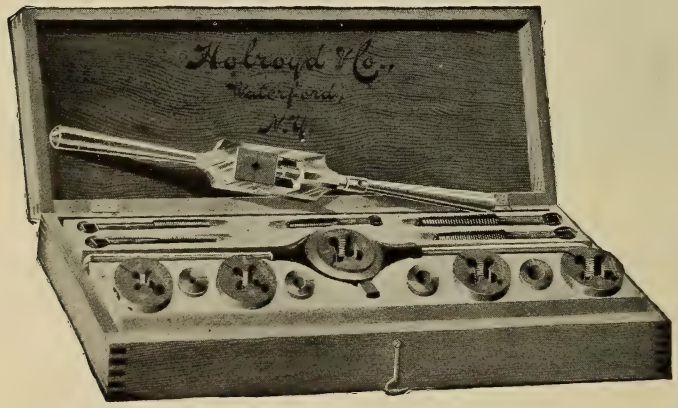
FOR BOLTS.

We offer a complete line of improved tools.

The Hart Mfg. Co.
Cleveland, Ohio,
U. S. A.

HIGH GRADE

TAPS, DIES, SCREW PLATES, STOCKS AND DIES.



WILL MAIL CATALOG FOR THE ASKING.

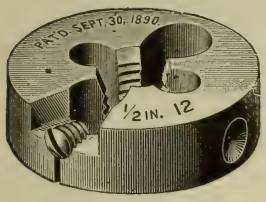
HOLROYD & CO., Waterford, N.Y., U.S.A.

ESTABLISHED 1845.

Taps, Dies and Screw Plates

FOR

Machinists, Gunsmiths, Watch-Makers and Jewelers.



TAPS

in all sizes and for all purposes.

We manufacture and carry in stock the largest and most complete line of Screw Cutting Tools.

NUT TAP.

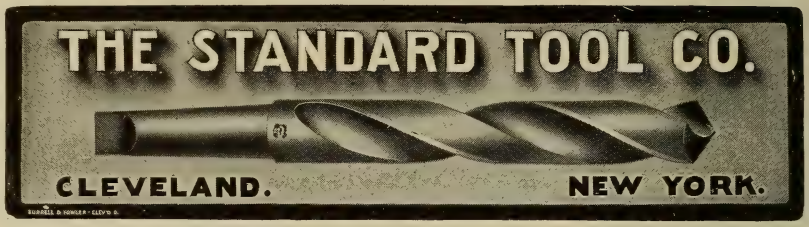
Just remember CARD can furnish you anything in the shape of a TAP or DIE.

HOB TAP.

Write for Catalogue and Price List.

S. W. Card Manufacturing Co.,

Mansfield, Mass., U. S. A.



Red Shield Catalogue on Application

Sheet Metal Stamping

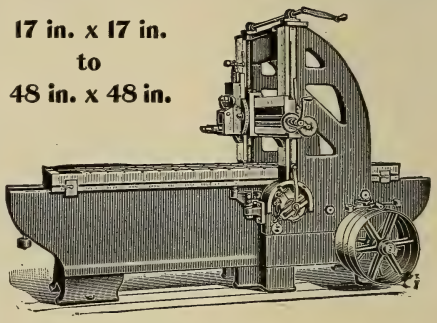
Difficult Work a Specialty.
Large Factory Facilities.

The Federal
Manufacturing Co.

Smith Stampings Factory,
Milwaukee, Wisconsin.

WHITCOMB PLANERS

17 in. x 17 in.
to
48 in. x 48 in.



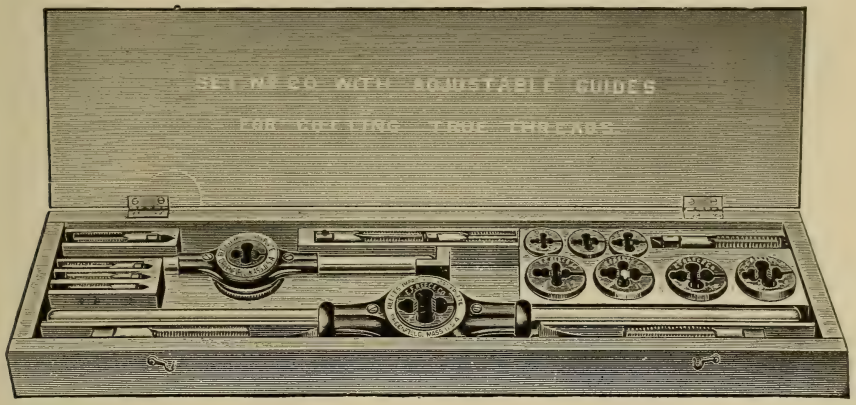
ACCURATE.
HEAVY AND POWERFUL
ALWAYS WELL MADE.
HANDY.

Whitcomb Manufacturing Co.
WORCESTER, MASS., U. S. A.

ESTABLISHED 1874. INCORPORATED 1898.

REECE'S Patent Adjustable Screw Plates

Are acknowledged by practical mechanics the world over to be the BEST.



Set No. 20 with Patent Adjustable Guide, Cutting from 1-4 to 1 inclusive. 9 Sizes. Price in Case $26.00.

Write for Catalogue and Discounts.

The E. F. REECE COMPANY

GREENFIELD, MASS., U. S. A.

...WE BUILD...

Hook and Eye Machines,
Safety Pin Machines,
Eyelet Machinery,
Wire and Metal Forming Machines.
Power Presses, All Kinds,
Slitting and Swaging Machines,
Fork, Spoon and Knife Burnishing Machinery,
Wire Spooling Machines.
Special Lathes and Tumbling Barrels,
Patent Continuous Wire Drawing Machinery,
Bull Blocks and Wire Benches,
Sheet Metal Winders and Drying-out Machines,
Special Automatic Machinery.

Catalogues A, B and C.

THE WATERBURY MACHINE CO.
WATERBURY, CONN.

The Turner, Vaughn & Taylor Co.

CUYAHOGA FALLS, O.

ENGINEERS,

FOUNDERS

and MACHINISTS,

...BUILDERS OF...

A complete line of Wire Making Machinery, including Steam Cranes, Muffles, Bakers, Wire Drawing Benches, Cleaning House and Mill Trucks, Plain and Automatic Reels, Galvanizing Furnaces and Machines, Wire Straightening and Cutting Machinery.

CHAIN MAKING MACHINERY,

COMPLETE OUTFITS.

SEWER PIPE PRESSES

NOZZLE and TUYERE PRESSES.

MACHINERY BUILT TO ORDER.

CORRESPONDENCE INVITED.

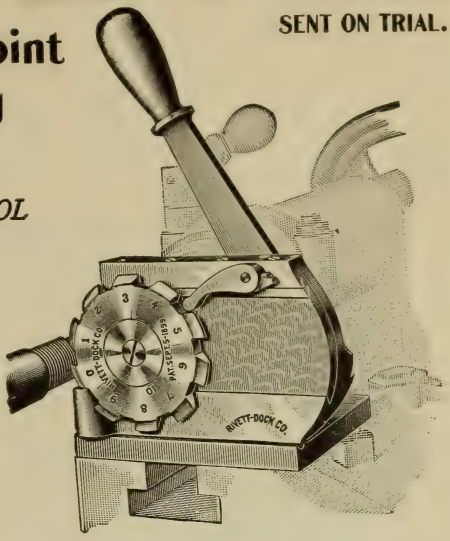
Why Use a Single Point Tool for Cutting Threads.

THE RIVETT DOCK TOOL

with unskilled labor will produce more accurately finished duplicate work in one week, than the most skilled mechanic can in three weeks, with a single point tool.

Sent on Approval to any responsible concern.

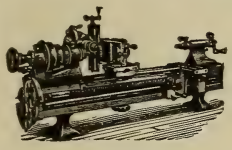
SENT ON TRIAL.



WRITE FOR OUR CATALOG.

THE RIVETT DOCK COMPANY,

BRIGHTON, BOSTON, MASS., U. S. A.



The RIVETT

PRECISION LATHE.

IS THE KING OF ALL LATHES, IN A CLASS BY ITSELF.

GAINS HIGHEST AWARDS WHEREVER EXHIBITED.

SEND FOR CATALOG.

FANEUIL WATCH TOOL COMPANY,

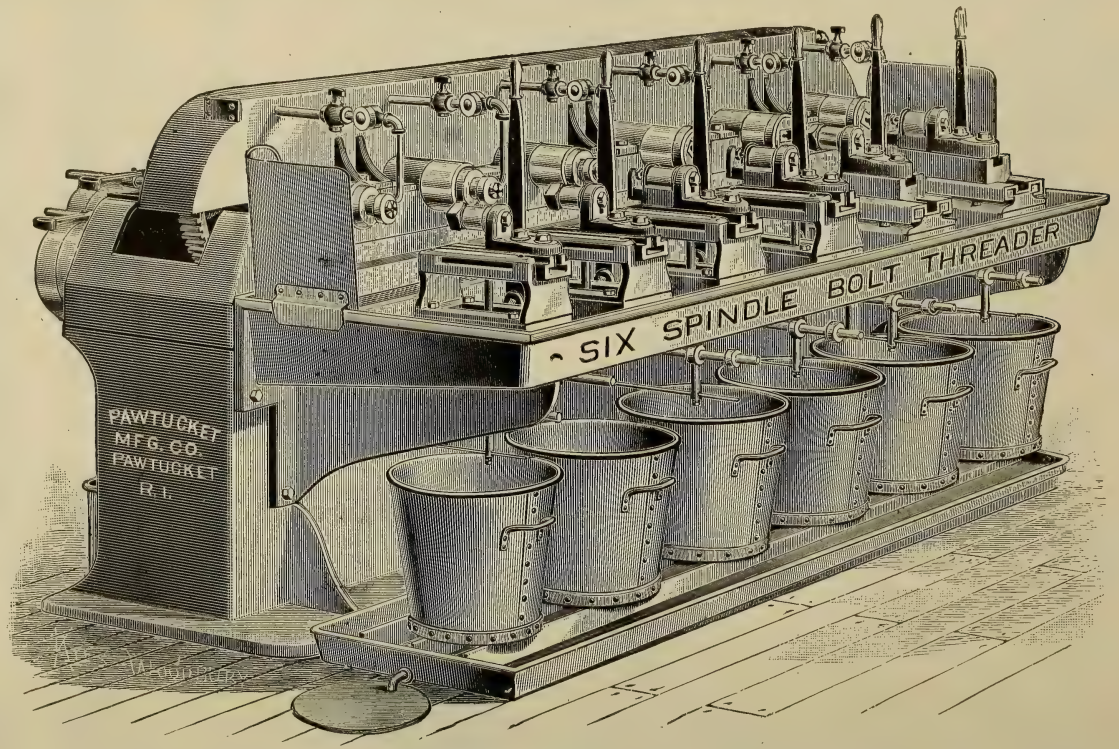
Brighton, Boston,

MASS., U. S. A.

Semi-Automatic Solid Die Bolt Threading Machine.

Built in Four Sizes—2, 3, 4 and 6 Spindles.
Send for description and price.

Bolts,
Cold
Punched
Nuts,
and
Special
Punchings
of
every
description



Full
Line
Bolt and
Cold
Punched
Nut
Machinery

—

Special
Machinery

Pawtucket Manufacturing Company, Box 999, **Pawtucket, R. I., U. S. A.**

SOLID DIE

Automatic Machines

ARE THE ORDER OF THE DAY.

We make a specialty of Machines for threading

MACHINE
STOVE
TRACK
TIRE AND PLOW
CARRIAGE

BOLTS

SPRING
WHIFFLETREE
BRIDGE AND ROOF
HOOK
ELEVATOR

BOLT ENDS, STUDS, HARROW, THRESHER AND RAKE TEETH, IMPLEMENT PARTS, WAGON SKEINS, AXLES, CLIPS, CARRIAGE HARDWARE, BICYCLE SPOKES, ETC.

Our Threading Machines are the most practical and most economical, because they are the most simple.

We also manufacture

Self-Oiling Grinding and Polishing Machinery; Bar and Knife Making Machinery for Reaper and Mower Manufacturers; Aluminum Reducing Wheels for Engine Indicators.

WRITE FOR CATALOGUE.

SPECIAL MACHINERY DESIGNED AND BUILT TO ORDER.

Webster & Perks Tool Co.

Box 1520, Springfield, Ohio, U. S. A.

Name Plates

for Machinery.

We make name plates for some of the largest makers of machinery in the United States, and we would be pleased to send you sample and quote price.

No Plate too Large or too Small.

The Murdock Corporation

152 BOYLSTON STREET,

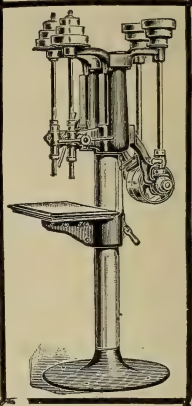
Boston, Mass., U. S. A.

Clamp Drills

Geared and Plain.

DRILLS WITH 1 TO 10 SPINDLES.

PLANER CHUCKS, ROUND OR SQUARE BASE.

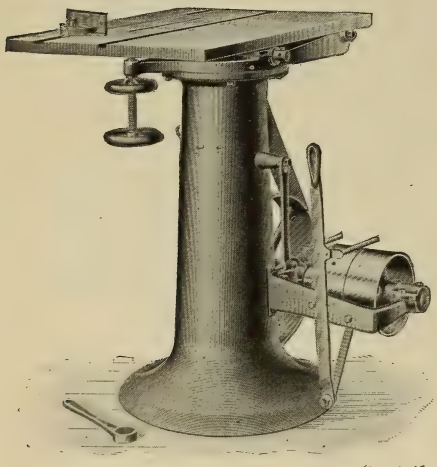


The Francis Reed Co.

43 HAMMOND ST.,

WORCESTER, - - - MASS.

Circular Saw Table.



For sawing metal, ivory, wood, etc. Just the thing for Metal Workers. Very rigid. The table is vertically adjustable; has grooves planed on each side of the saw slot for the reception of a mitre gage by which either right or left-hand mitres may be accurately sawed. A ripping gauge is also supplied to order. Saws from 6″ to 12″ diameter can be used.

E. O. GRABO, 180-182 Centre Street, N. Y.

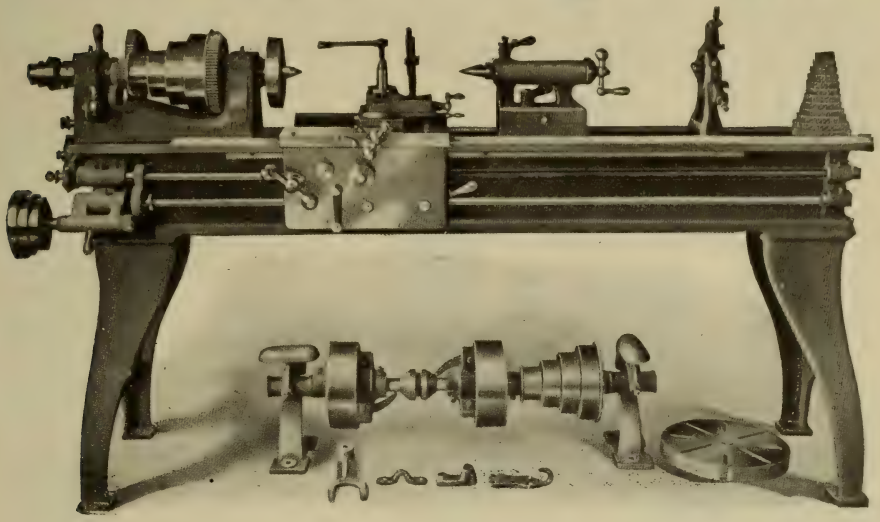
If you want first class

NAME PLATES

at reasonable prices send to the

The Oldest House in Boston in this line.

13½″ x 6′ Up-to-Date Engine Lathe



Manufactured by

The Miami Valley Machine Tool Co., Dayton, Ohio.

Write for Circular and Price.

DRILLS.

Complete line of Drills for light work, one or more spindles, hand or automatic feed. Well built and thoroughly up-to-date.

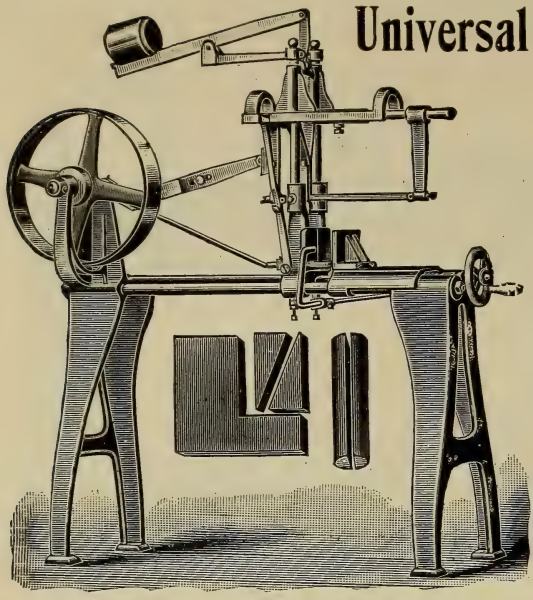
....WE ALSO BUILD....

Marking Machines, Bolt Head Millers.
Grinding Machines, Gear Cutters,
Automatic Pinion Cutters, Etc.

Send for 125-page Catalogue.

The Dwight Slate Machine Co.

Hartford, Conn., U. S. A.



Universal Power Hack Saw

CHEAPEST AND BEST.

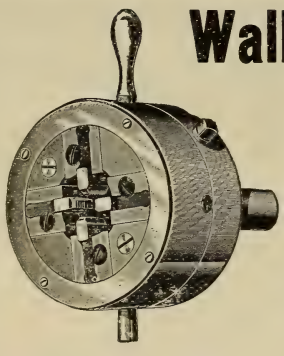
Automatic stop, adjustable stroke. Saw Blade works in center of vise, anti-friction rolls guide the blade.

Universal Hack Saws

For every possible purpose. Hardened all over and tempered for best results. Every saw warranted.

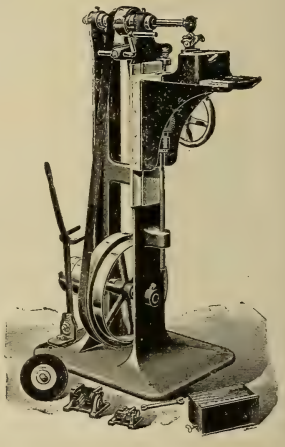
SEND FOR CIRCULAR.

WEST HAVEN MFG. CO., New Haven, Conn.



Wallace Self-Opening Adjustable Die Heads

take the place of solid dies on the turrets of hand and automatic screw machines. They are superior to any other make in strength and durability, make perfect threads at **one cut,** and last twice as long as other dies. The great advantage of the Wallace lies in the cam which holds the chasers in place directly over the point of duty and thus insures absolutely regular threads. Made in eight sizes—special sizes to order. We also manufacture the



Wallace Patent Chaser Grinder,

Solid Dies, Tap and Die Holders, and Tapping Attachments for Drill Press.

Write for Catalogue.

Modern Tool Company,

ERIE, PA.

The Champion Time Saver.

If you use reamers and consider your time of any value, the advantages of our Universal Adjustable Reamers will appeal to you. Ten seconds is all that is required to obtain any adjustment—a turn of a couple of collars with a spanner wrench comprises the operation. McCrosky Reamers are High Grade Tools, carefully designed, well made and last indefinitely, as worn out blades may be easily replaced. The adjusting collars are carbonized and the blades made of best material, tempered and ground. By a uniform movement of the blades it is unnecessary to grind to size after adjusting—thus saving time and blades.

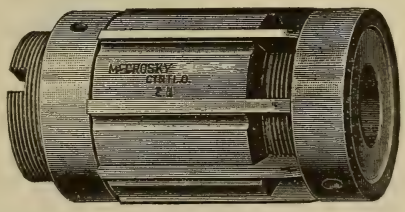
HAND, MACHINE AND SHELL REAMERS,

MADE IN ALL SIZES.

F. B. McCrosky Mfg. Co.,

Meadville, Pa., U. S. A.

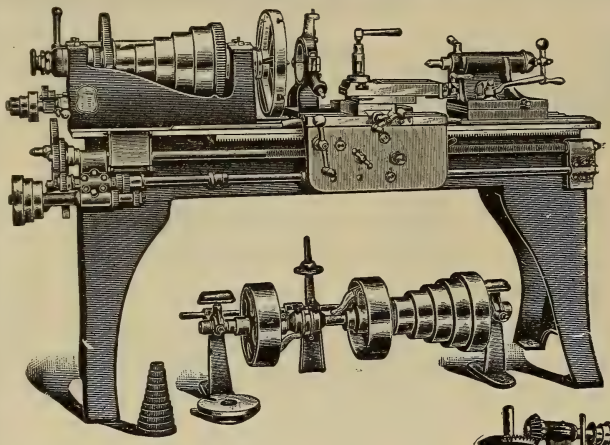
Sent on Trial to responsible parties.



Catalogue and Price List mailed free.

For High-Grade Tools

Try Blaisdell Tools.



Engine Lathes

13 inch to 31 inch swing.

Beds any length from 4 feet to 30 feet.

Drills

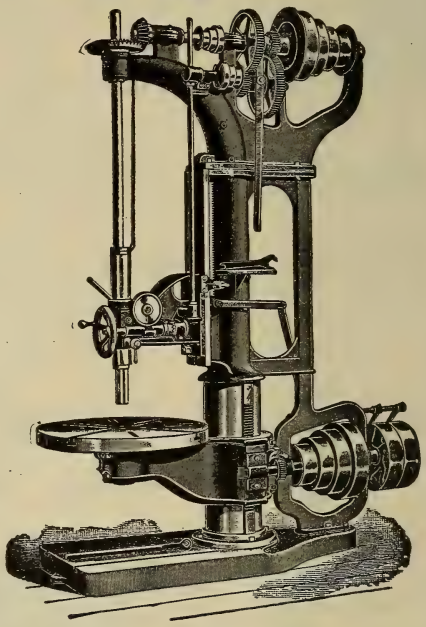
20 in. to 50 in. Swing, inclusive.

Speed Lathes

10 in. to 20 in. Swing, inclusive.

Pattern Makers' Lathes

10 in. to 20 inch.



AUTOMATIC TURRETS for LATHES from 13 in. to 20 in. and **TURRETS for CARRIAGE.**

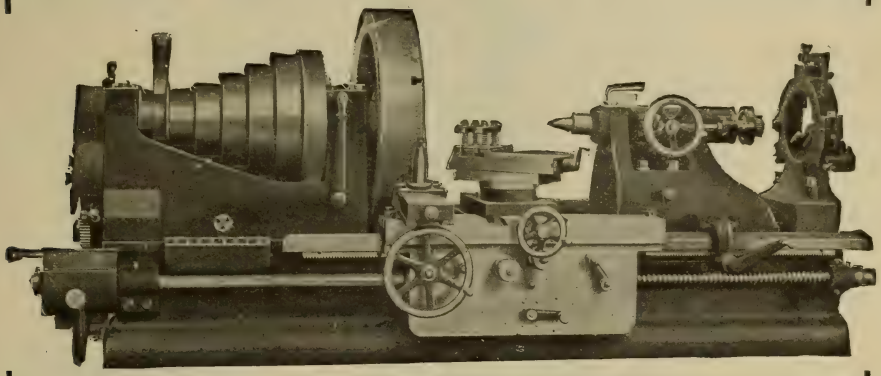
Our Catalog shows full line of Machine Tools.

P. Blaisdell & Co., 26 Jackson St., WORCESTER, MASS.

AGENTS—J. L. Osgood, Buffalo, N. Y. Hill, Clarke & Co., Boston, New York and Chicago. Garvin Machine Co., New York. Smith-Courtney Co., Richmond, Va. Girard Machine & Tool Co., Philadelphia, Pa. Baird Machinery Co, Pittsburg, Pa. Joshua Hendy Machinery Co., San Francisco, Cal.

FOREIGN AGENTS—C. W. Burton, Griffiths & Co., London, Eng. Henry W. Peabody & Co., France and Australia. V. Lowener Copenhagen, Denmark. Wilh. Sonesson & Co., Malmo, Sweden. Deutsche Garvin Maschinen Fabrik, Burg Strasse 17, Berlin, Germany.

Large Lathes



On our large lathes we have

32 GEARED FEEDS 32
32 CUTS 32 THREADS 32

From 14 per inch to one in two inches.

Can be compounded coarser or finer for threads or feeds.

SELF OILING BEARINGS.

STEEL GEARING, excepting the back gear train.

HARDENED TOOL STEEL STUDS with bronze bushings.

RATCHET RACK in center of bed and pawl in tail-stack holds it up to its work positively.

POWER. By using our Speed Variator, or Variable Speed Countershaft, we can furnish almost double the width of belt possible with a cone pulley and NEVER CHANGE THE BELT.

Sizes 14 inch to 48 inch.

CATALOGS "I" AND "L" TELL ALL ABOUT IT.

The Lodge & Shipley Machine Tool Co.

CINCINNATI, OHIO, U. S. A.

PRATT & WHITNEY CO.

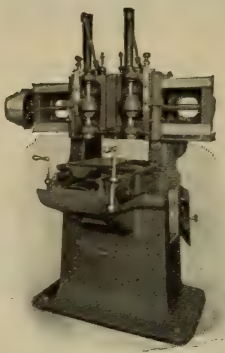
NEW MODELS

Double and Single Spindle Profiling Machines.

Lincoln Milling Machines.

Cutting-off Machines.

Centering Machines.



DOUBLE SPINDLE PROFILING MACHINE.

NEW MODELS

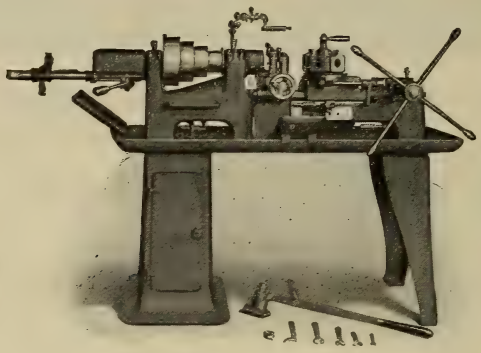
Multi-Spindle Drills.

Fourteen inch Lathes.

10 inch Toolmakers' Lathes.

Bench Lathes.

THREAD MILLING MACHINES.

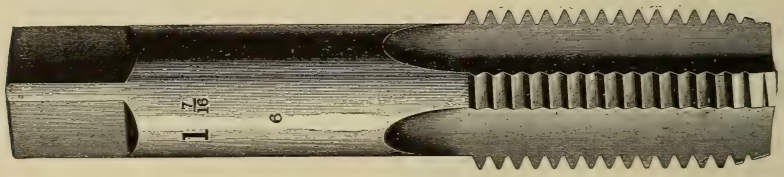


1 x10 IN. NEW MODEL TURRET LATHE.

NEW MODEL TURRET LATHES.

Five Sizes.

SMALL TOOL DEPARTMENT.



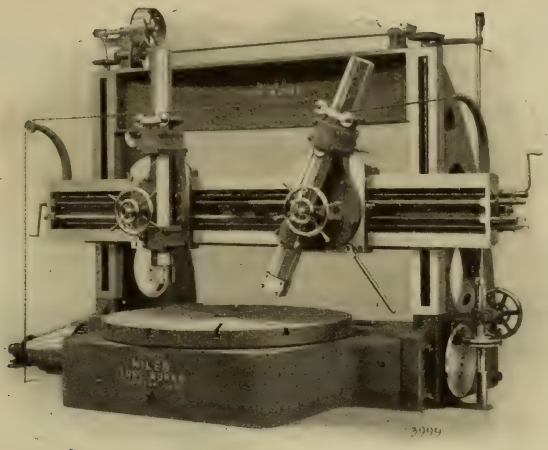
Always in stock. Taps and Dies, Die Stock Sets for Bolt and Pipe Threading, Milling Cutters, Slitting Saws, Renshaw Ratchet Drills, Lathe Tools, Tapping Heads, Boiler Punches, Reamers, Taper Pins, Etc., Etc.

PRATT & WHITNEY CO., WORKS, HARTFORD, CONN., U. S. A.

NEW YORK, 136-138 LIBERTY ST. Boston, 144 Pearl St. Philadelphia, 21st & Callowhil Sts. Pittsburgh Pa., Frick Building. Chicago, 46 South Canal St. St. Louis, Mo., 516 No. Third St. Copenhagen, Denmark, V. Lowener. Stockholm, Sweden, Aktiebolaget, V. Lowener. Paris, Fenwick Freres & Co., 21 Rue Martel, Agents for France, Spain, Italy, Belgium, Switzerland, and Portugal. London, Buck & Hickman, Ltd., 2 and 4 Whitechapel Road.

THE NILES TOOL WORKS CO.

RAILWAY TOOLS A SPECIALTY



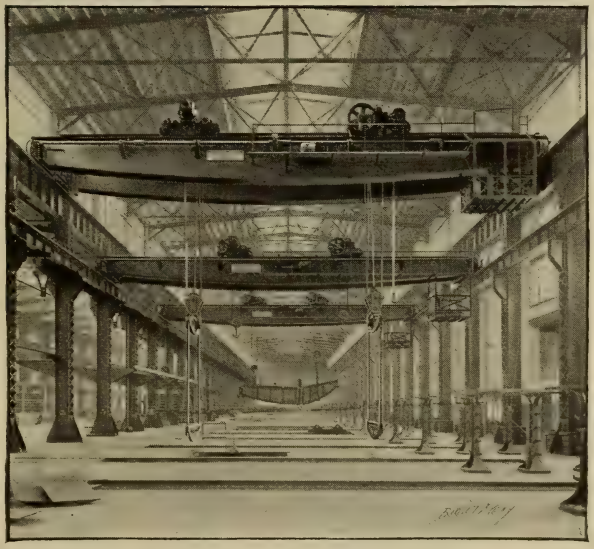
NILES 10-FOOT BORING MILL.

THE NILES TOOL WORKS CO.

Works, HAMILTON, OHIO, U. S. A.

136-138 LIBERTY ST., NEW YORK.

NILES ELECTRIC TRAVELING CRANES



ONE 120-TON CRANE WITH 3-TON AUXILIARY. TWO 35-TON CRANES, P. & R. SHOPS, READING, PA.

NILES-BEMENT-POND COMPANY,

136-138 Liberty St., New York, U. S. A.

PHILADELPHIA. CHICAGO. BOSTON. PITTSBURG. LONDON, ENG

E. P. Reichhelm & Co.

Manufacturers and Dealers in Tools.

23 John Street, New York.

Representing

AMERICAN GAS FURNACE CO.

Gas Engineers and Manufacturers of Heating Tools.

GAS BLAST FURNACES,
HEATING MACHINES,
GAS GENERATORS AND
PRESSURE BLOWERS.

New Catalogue in January, 1903.

AMERICAN SWISS FILE & TOOL CO.

Manufacturers of Fine Files.

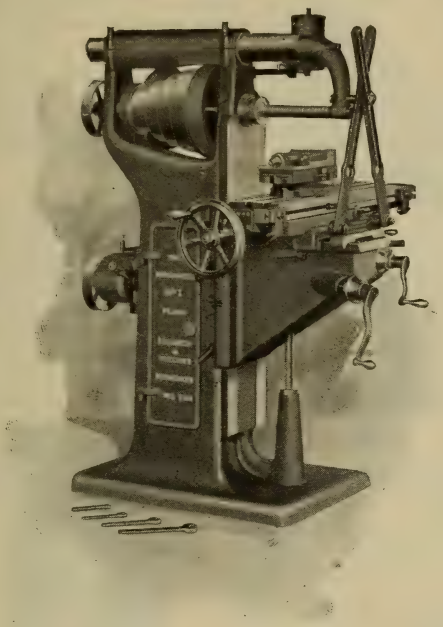
"Star and Cross Brand"

Unequalled in Uniformity and Excellence of Quality, by the best Foreign Brands.

Price List and Samples on request, free of charge.

The Milwaukee Miller

gives permanent and increasing satisfaction wherever it is used



Built by Kearney & Trecker in Milwaukee

THERE is good reason for this, because the MILWAUKEE MILLING MACHINE is built on correct principles, according to the most advanced ideas. It leads, and others follow.

All three automatic feeds are engaged or disengaged by a lever at the front of the machine, and only one can be engaged at a time. The feed change box gives any feed in a couple of seconds.

The knee is of box section, closed on top, so that it is as rigid as it can possibly be made.

The vertical spindle attachment greatly adds to its productiveness, and sets it far ahead of any machine on the market.

Every one of our customers is more than pleased with his purchase. *Delighted* is a better word.

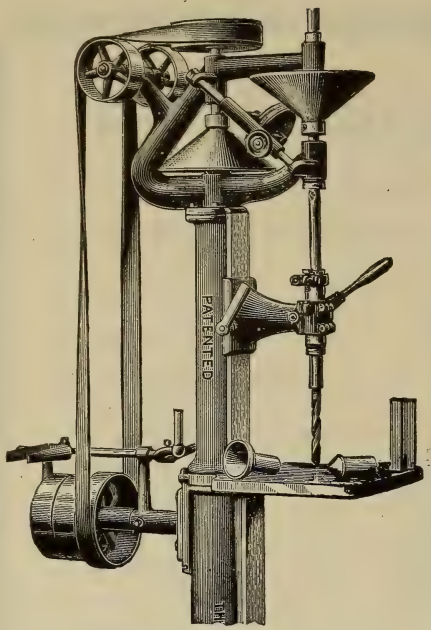
Our monthly magazine "Shop Talk" tells more about it. Want a copy? Catalog, too, is free

Hill, Clarke & Company

14 So. Canal St. Chicago — **Machinery Merchants** — 123 Liberty St. New York

Main Office, 156 Oliver St., Boston

Pittsburg Representative, Chas. G. Smith Co., 347 Fifth Avenue



THE KNECHT BROS. COMPANY,
C. H. & D. R R. & Frederick St., Cincinnati, O.

These are only a few of the Good Features of the

Knecht Friction Sensitive Drill.

ANY SPEED YOU WANT can be obtained INSTANTLY without SHIFTING A BELT, by simply **SLIDING FRICTION ROLLER up and down between the two Cones, without stopping or the operator changing his position.**

The rod on which Friction Roller slides is **GRADUATED AND MARKED WITH SIZES OF DRILLS within range of machine,** and all you do is **SET END OF FRICTION ROLLER FRAME ON GRADUATION CORRESPONDING TO DRILL YOU ARE USING,** and you have the **EXACT SPEED** for your drill.

PROTECTION AGAINST BREAKAGE OF DRILLS, is our device for **GRADUATING POWER TO DRILL SPINDLE.** By this method **INCREASED OR DIMINISHED POWER IS APPLIED TO THE SPINDLE INSTANTLY;** powerful enough to drive and at the same time sensitive enough to protect from breakage the drill you are using.

For other money making features write for Booklet No. 16.

ROGERS Standard Gauges

Recognized Standards for Accuracy.

Limit Gauges made with any desired variation, plus or minus, from the standard. Sets furnished for running and force fits. Prices quoted on receipt of specifications

Complete line of Standard Caliper Gauges, Standard Reference Discs, Solid Adjustable Reamers, Adjustable Hollow Mills and Hardened Steel Mandrels carried in stock.

Measuring Machines for testing and originating Standard Gauges, built in three sizes.

Special Tools and Gauges made to order.

Write for Catalog of Small Tools

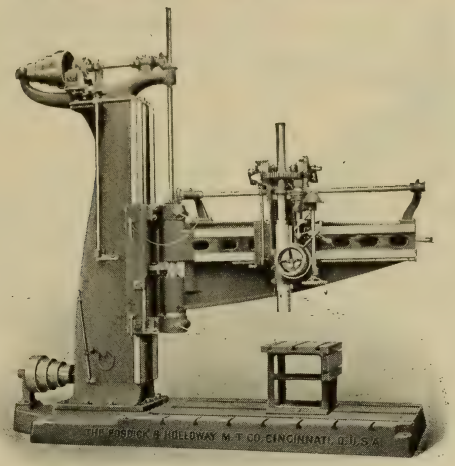
The John M. Rogers Boat, Gauge and Drill Works,
Gloucester City, N. J., U. S. A.

FOREIGN AGENTS—Chas. Churchill & Co., Ltd., London and Birmingham. C. W. Burton, Griffiths & Co., London. Selig, Sonnenthal & Co., London. V. Lowener, Copenhagen, Denmark.

The Fosdick Machine Tool Co.

RADIAL DRILLS.

Send for our new Catalogue which tells all about them "who are using them" and how they like them.



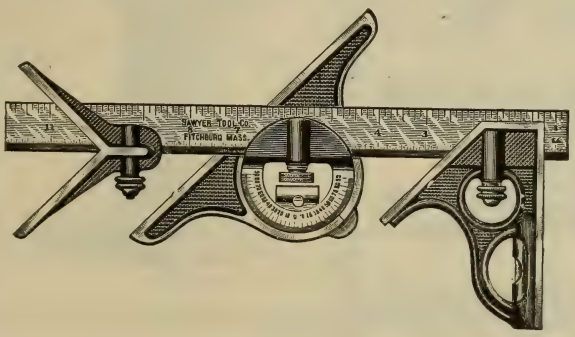
Sizes, 2½, 3, 4, 5, 6, 7 and 8 foot Arm Radials. 5 and 6 foot Arm Half and Full Universal Radials.

CINCINNATI, O., U. S. A.

We Prefer to Originate, Rather than Imitate

By so doing we furnish our customers with a line of strictly UP-TO-DATE TOOLS that never fail to please them.

One of Our Originations, the Hard Blade Combination Set No. 35.



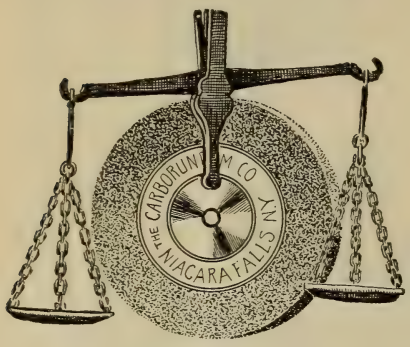
Sold by All Dealers at Soft Blade Imitators Prices.

We have a catalogue which tells all about the line of tools we have originated and its free. Send for it.

SAWYER TOOL MFG. COMPANY, Fitchburg, Mass., U. S. A.

Weigh Carborundum

in the scales of actual use—test it on the hardest work you have to do.



If you don't find it the hardest, sharpest, fastest cutting abrasive you ever had in your shop—if you do not find that it actually saves you money in your grinding department, the experiment won't cost you a cent.

We Guarantee Carborundum

Comes in the form of grinding wheels, sharpening stones, abrasive cloth and paper, grains and powders.

Write for the Catalogue.

THE CARBORUNDUM COMPANY

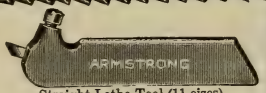
NIAGARA FALLS, N. Y.

STRONG

ALL SIZES of LATHE and PLANER TOOLS for all Kinds of Work.

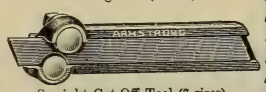
Save all Forging, Tempering and Dressing. 90 per cent tool steel, 70 per cent Grinding by adopting the Armstrong System of Tool Holders, using inserted Cutters of self-hardening steel. Write for catalogue.

Armstrong Bros. Tool Company
613 Austin Av.
CHICAGO, ILL.



Straight Lathe Tool (11 sizes)

Boring Tool (6 sizes)



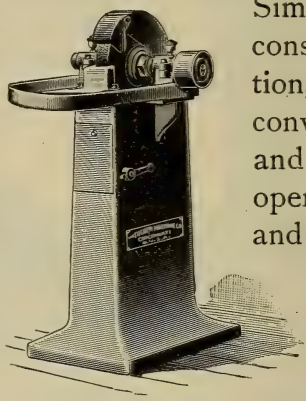
Straight Cut-Off Tool (7 sizes)

Threading Tool (5 sizes)

Off-Set Cut-Off Tools (8 sizes)

Planer Tool (7 sizes)

14″ Tool Grinder



Simple in construction, convenient and rapid in operation, and the lowest priced **good** tool grinder on the market.

This machine has an emery wheel 14″ in diameter and 2″ thick—can be used either wet or dry.

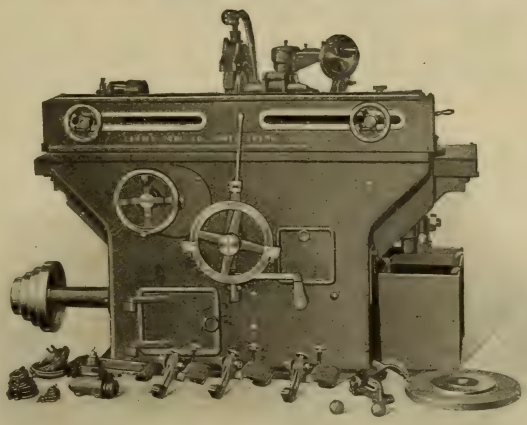
Send for Catalogue.

TUCKER MACHINE COMPANY,
Cincinnati, Ohio.

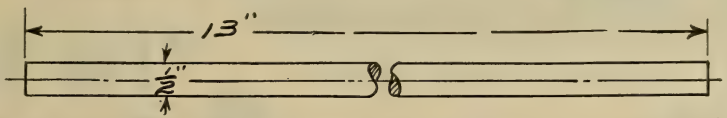
Landis Grinding Machines

Plain and Universal

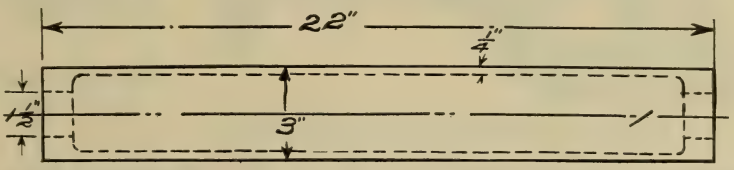
For Cylindrical, Conical and Plane Face Surfaces.



Samples of Work done on No. 11 Machine.



Cold drawn steel reduced .005. 25 finished per hour. Accuracy limit .000¼ inch.



Cast Iron—Grinding time 20 minutes, from rough casting. Reduced ⅛" diameter, accuracy limit .002, inch.

GRINDING MACHINES FROM 10 INCH TO 26 INCH SWING.

Send for Catalogue.

Landis Tool Company, Waynesboro, Pa.

AGENTS—Walter H. Foster Co., New York, Boston, Cleveland and Pittsburg. C. W. Burton, Griffiths & Co., London. Schuchardt & Schutte, Berlin, Cologne, Vienna, Brussels, Liege, Paris, Milano, Bilbao, Stockholm and St. Petersburg.

The Billings & Spencer Company

HARTFORD, CONN., U. S. A.

Organized in 1869.

Manufacturers of

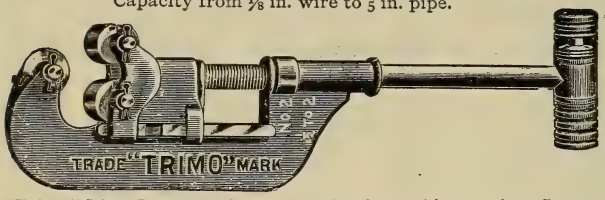
Drop Hammers, Trimming Presses, Heating Furnaces, Machinists Tools and Drop Forgings of every Description.

We are the pioneer makers of Drop Forgings and for this work possess the largest plant in the world. Our Trade Mark (B) on a tool is a guarantee that such tool is reliable. Our line of Drop Forged Machine and Adjustable Wrenches is the most complete in existence and favorably known throughout the world.

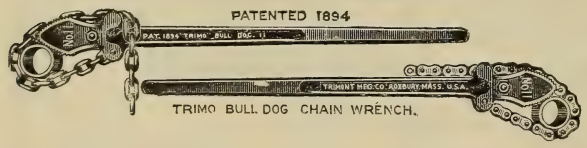
No. 8 Long Lane, Aldersgate Street, London, E. C.
Fenwick, Freres & Co., 21 Rue Martel, Paris.

"TRIMO" PIPE TOOLS

"Trimo" Pipe Wrench, 8 sizes from 6 in. to 48 in long. Capacity from ⅛ in. wire to 5 in. pipe.



"Trimo" Pipe Cutter, 3 sizes, cuts pipe from ⅛ in. to 3 in. Convertible into a three-wheel cutter by substituting wheels for the two rolls.



7 sizes; capacity ⅛ in. to 12 in pipe. This is the strongest wrench made. Attractive features: the pocket for the chain being in the handle, the pulling strain comes upon the handle instead of the jaws Second: to reverse the wrench while on the pipe it is necessary only to loosen the chain and place the jaws upon the opposite side of the pipe.

"The Big Three"

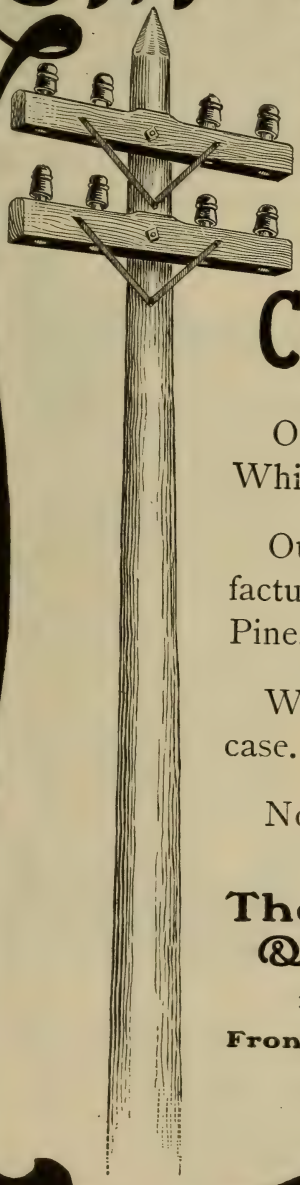
Specialties of the

Trimont Mfg. Co.

ROXBURY, MASS.

Motto: "The Best of Their Kinds."

We spare no expense to make them so.



POLES AND CROSS-ARMS

Our Poles are the Southern White Cedar or Juniper.

Our Cross-arms are manufactured from Florida Heart Pine.

We own the timber in each case.

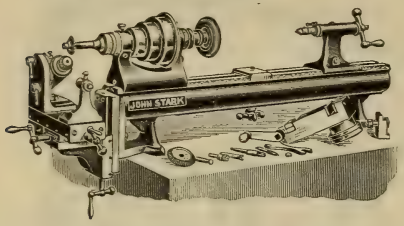
No Middleman's Profit.

The Standard Pole & Tie Company,

100 Venezuela Building,

Front & Pine Sts., New York.

Machinists' Bench Lathes



No. 4 Stark Bench Lathe with Milling Attachment.

For Engineers, Tool Makers, Model Makers and Electricians.

These lathes are especially adapted for the manufacture of fine machinists' tools and machinery, and are the only lathes with the anti-friction, adjustable ball bearing end thrust for lathe spindles.

Send for illustrated Catalogue.

STARK TOOL CO., Waltham, Mass., U. S. A.

Stewart Adjustable Socket Handle

Price, $4.00 per 100

Frank H. Stewart & Co.
35 North 7th Street
Philadelphia

Leon W. Pullen
Electric
Company

618 Chestnut Street
Philadelphia, Pa.

EMPIRE WIRE COMPANY,

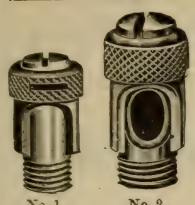
Manufacturers of

Bare and Tinned Copper Wire, and Silk and Cotton Covered Magnet Wire.

Our Policy, "QUALITY AND PROMPT SHIPMENTS."

General Offices, 92 William St., New York City.
Factories, Rome, N. Y., and Lisbon, N. H. Chicago Office, 60 West Van Buren St.

WINKLEY OIL HOLE COVERS.



No. 1. No. 2.

Dust proof, self-closing or not, as desired. Five sizes, 1-4 inch to 1-2 inch.

A different style for places narrow and difficult to reach.

No. 3.

Constant feed cups, the snout of oil can or finger push down the case for filling.

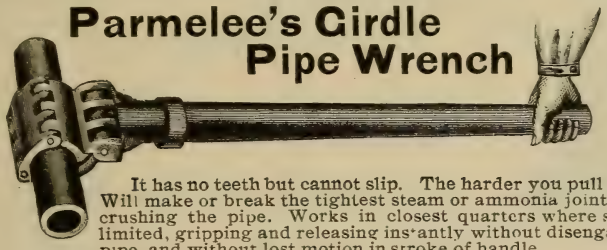
No. 4. No. 5.

A cup for flush surfaces and cone pulleys. The bottom is threaded inside to receive small tube, which can be cut to length suiting diameter of pulley.

No. 6.

THE WINKLEY CO., HARTFORD, CONN.

Parmelee's Girdle Pipe Wrench



IT WON'T BITE

It has no teeth but cannot slip. The harder you pull the tighter she'll grip. Will make or break the tightest steam or ammonia joint without chewing or crushing the pipe. Works in closest quarters where space between pipes is limited, gripping and releasing instantly without disengaging or talling from pipe, and without lost motion in stroke of handle.

PARMELEE WRENCH COMPANY, 1056 MONROE ST., CHICAGO, ILL. Telephone West 948.

Direct from Stump to You

Always carry large ready stock standard sizes

TIES { TROLLEY & STEAM ROADS
ALL KINDS AND SIZES

POLES { Long Leaf, Yellow Pine, Octagonal and Square
Juniper or Southern, White Cedar
Chestnut and Cypress

Yellow Pine Cross Arms, Pins & Brackets

Prompt deliveries from stock, New York City Yard or direct from Mills

MANUFACTURED BY

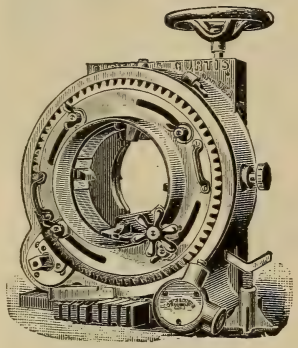
ECCLESTON LUMBER CO.

29 Broadway, New York

The Curtis & Curtis Co.,

30 Garden Street, Bridgeport, Conn.

Manufacturers of the Forbes' Patent Die Stock.



NO. 56 HAND MACHINE.
Range 2½ to 6 in. R. H.

PIPE CUTTING AND THREADING MACHINERY.

For Hand or Power.

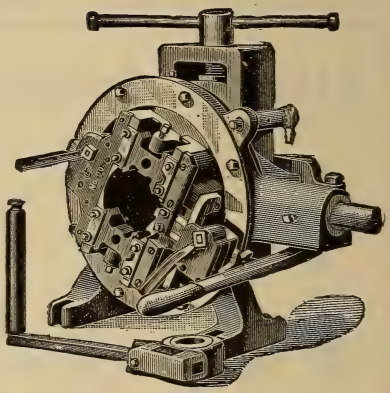
Pipe up to 12 inch cut off and threaded by one man with ease.

PORTABLE AND SIMPLE.

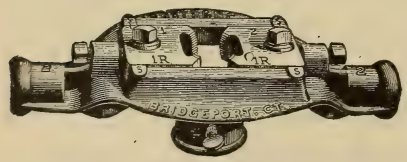
SEND FOR ILLUSTRATED CATALOGUE.

CUTS AND THREADS PIPE

of any size from 1 to 4 inches. Has two speeds either of which is readily interchangeable. All bearings are enclosed in a chamber which protects them from chips and dust. It has lots of little improvements here and there making it economical, serviceable and helpful. This is our 00 machine.



Armstrong's Adjustable Stock



Style No. 2.

and **Pipe Dies** work quicker and easier than others—they have a cutting edge different from other dies. It can be reached easily and can be sharpened without drawing the temper. It has other advantages that our catalogue describes.

THE ARMSTRONG MFG. CO., Bridgeport, Conn. 139 Centre Street, New York.

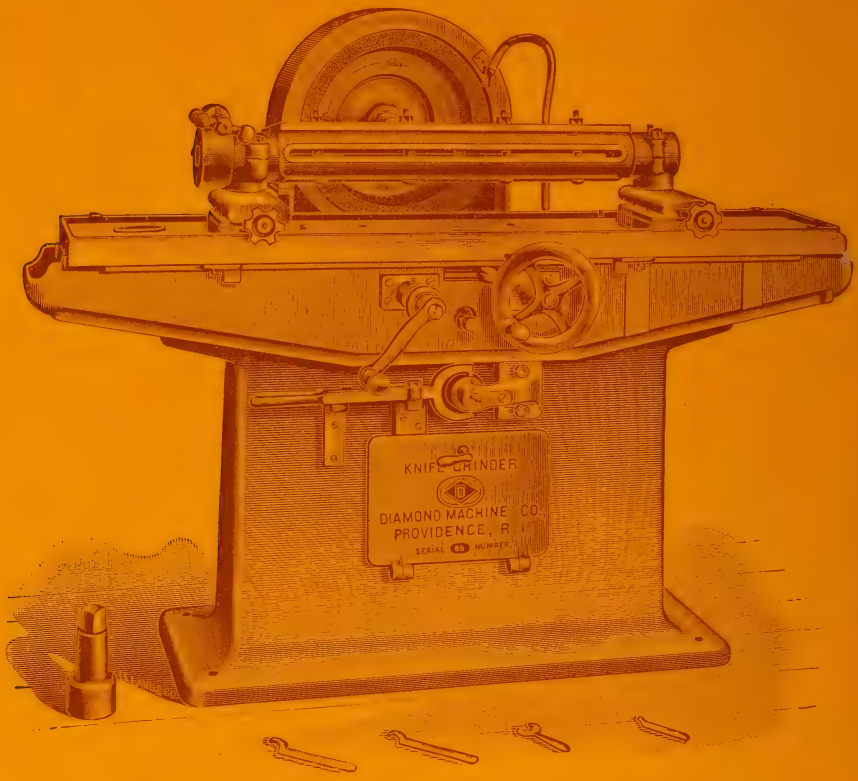
MECHANICAL INDEX
ADVERTISING SUPPLEMENT

SECTION II

WOOD WORKING MACHINERY

SEE ALPHABETICAL INDEX FOR
ADVERTISERS PAGE NUMBERS

Cylinder Wheel Automatic Knife Grinder.



The table has both hand and power feed, with automatic reverse at each end of the stoke. The length of the travel may be regulated by adjustable dogs. The lever shown on the front of the machine enables the operator to instantly stop or start the movement of the table at any point in its travel without stopping the emery wheel. The platen is wide and travels on wide ways.

The bar on which the knife is clamped is strong and is so arranged that the wheel will grind toward the edge, or the bar may be reversed, and the knife ground toward the butt. Each end of the knife may be moved to or from the wheel, by small hand screws. By this device the edge of the knife may be brought perfectly parallel to the guides on which the platen travels; after which the emery wheel is brought to the knife by the hand wheel. The knife bar is rotated by a worm gear shown at the left hand side of the bar and may be rigidly clamped when the setting is obtained. This allows grinding the edge of the knife to the desired bevel, as the knife may be set at any angle with the wheel.

PRICE LIST MAILED ON APPLICATION.

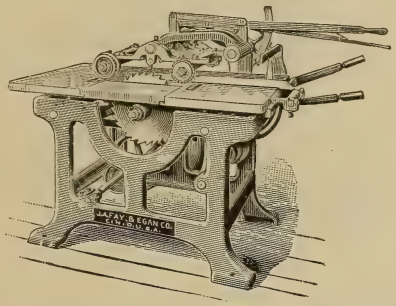
DIAMOND MACHINE COMPANY,
Providence; R. I., U. S. A.

Wood Working Machinery

"Grand Prix" and Decoration Legion of Honor, Paris, 1900.

Prices, cuts of these machines and full information sent on demand.

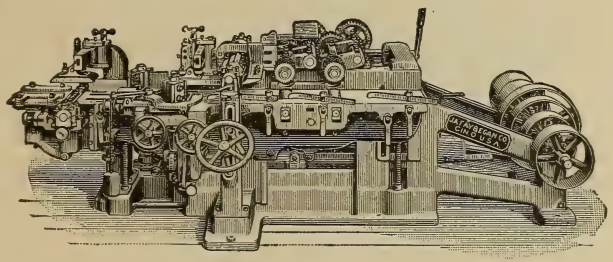
New illustrated book on Sanding Machines, free to those who write for it.



Pamphlet on care of Band Saws mailed on request.

No. 110 New Improved Self-Feed Rip Saw.

A fine new machine for general ripping in all woodworking shops.



No. 12 New Improved Outside Molder.

A fine and powerful machine for makers of moldings in large quantities.

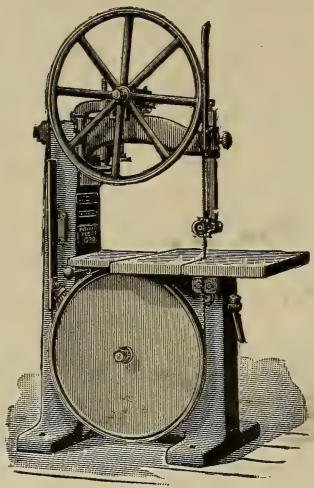
J. A. FAY & EGAN CO.

329-349 W. Front St., Cincinnati, Ohio.

Wood Working Machinery

"Grand Prix" and Decoration Legion of Honor, Paris, 1900.

Full Information, Cuts and Prices sent on request.



Pamphlet on care of Band Saws free.

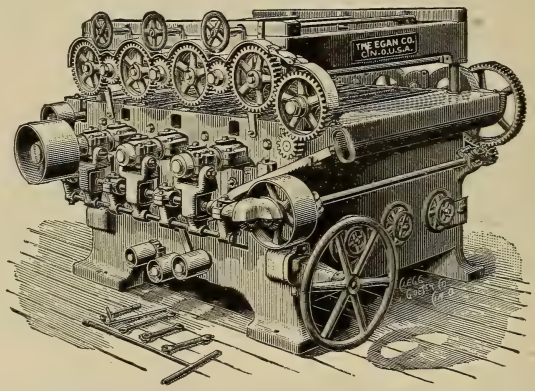
New Illustrated Book on Sanding Machines free to those writing for it.

No. 50 Band Scroll Saw.

Pat. Feb. 27, 1900.

Something entirely new in Band Scroll Saw Machinery.

Our Machines are used all over the World.



No. 4 Patent Eight-Roll Triple-Cylinder Sand Papering Machine.

Patented March 20, 1900.

Will work from 30 to 80 inches wide and 8 inches thick.

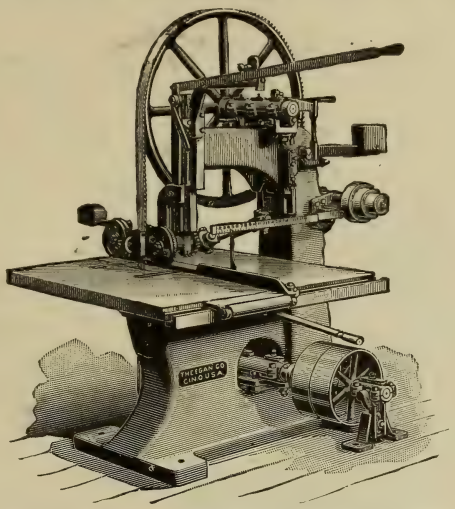
J. A. FAY & EGAN CO.

329-349 W. Front St., Cincinnati, Ohio.

Wood Working Machinery

"Grand Prix" and Decoration Legion of Honor, Paris, 1900.

New Illustrated Book on Sanding Machines free to those writing for it.



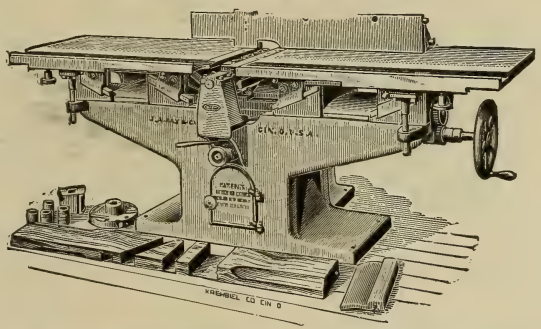
Pamphlet on care of Band Saws sent free.

Cuts, prices and full particulars cheerfully furnished on application.

No. 1 New Automatic Self Feed Band Ripping Saw.

Patented Feb. 27 and Oct. 2, 1900.

Will rip 24 inches wide and from 1 to 10 inches thick, without changing blades.



No. 4 Large Patent Variety Wood-Worker.

Will rip, taper, rabbet, cross-cut, gain, bevel, tenon, plane, bore, joint, groove, square-up, etc., etc.

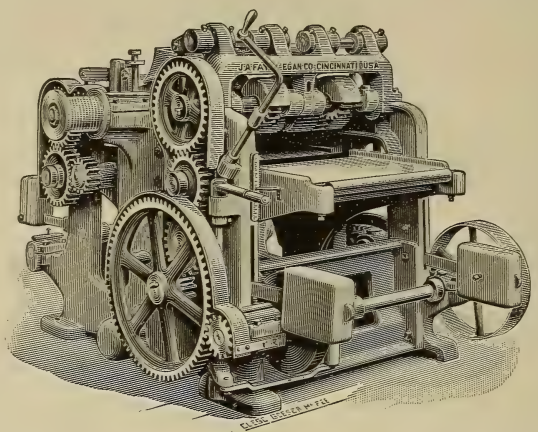
J. A. FAY & EGAN CO.

329-349 W. Front St., Cincinnati, Ohio.

Wood Working Machinery

"GRAND PRIX" AND DECORATION LEGION OF HONOR, PARIS, 1900.

New illustrated book on Sanding Machines free to those writing for it.



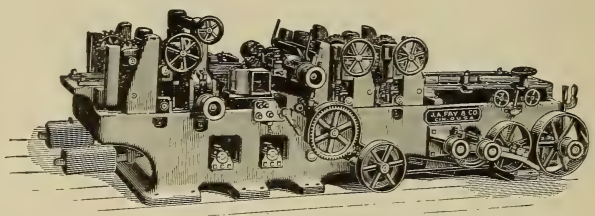
Prices, cuts and full information sent on request.

Pamphlet on the erection and care of Band Saws sent free.

No. 29 New Single Cylinder Planer.

(Patented Dec. 19, 1899; Feb. 6, 1900.)

With solid or divided feed wall. Has many new improvements.



No. 15 New Double Cylinder "Lightning" Floorer.

(Patented March 20, 1900.)

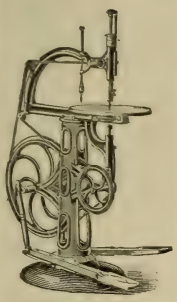
Furnished with or without Improved Belt Tighteners. Good machines for flooring, casing, ceiling, siding, etc. Write for copies of testimonial letters we have received from users.

J. A. FAY & EGAN CO.

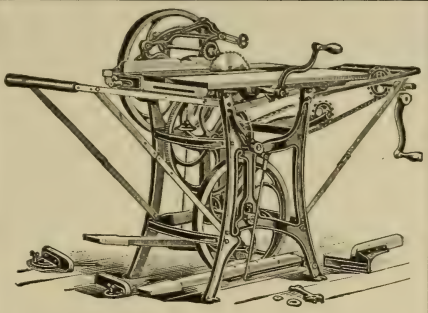
329-349 W. Front St., Cincinnati, Ohio.

Wood Working Foot and Hand Power Machinery

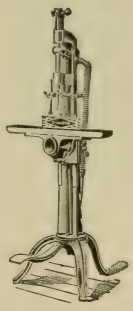
Scroll, Band, Circular Rip and Cross-cut Sawing Machines, Lathes, Edge Moulding and Mortising Machines and Attachments.



Victor Scroll Saw.



No. 5 Union Self-Feed Rip and Cross-Cut Saw.



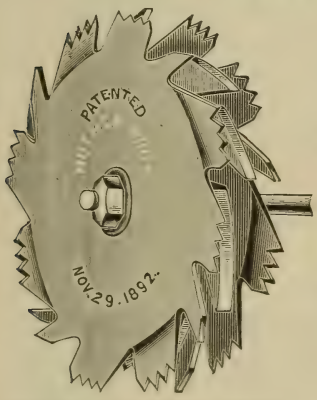
Diamond Mortiser.

We make a complete line of labor-saving machinery suitable for carpenters, cabinet-makers and all other wood-workers.
Send for catalog "A."

The Seneca Falls Manufacturing Company

368 Water Street, Seneca Falls, N. Y., U. S. A.

Huther Bros. Patent GROOVER or DADO HEAD.



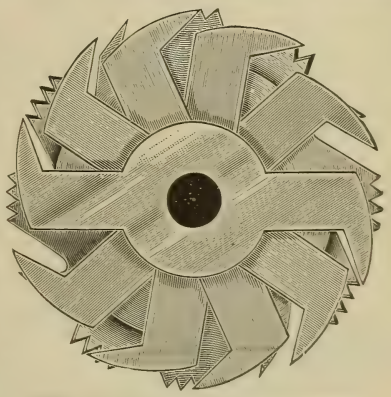
(Can be used on any Circular Saw Mandrel.)

For cutting any width groove from 1-8 inch to 2 inches or over.

It consists of two outside saws, each being a groover in itself and as many inside cutters as required.

The inside cutters are made 1-16, 1-8 and 1-4 in. thick so that any width groove measureable in sixteenths may be cut.

The outside cutters are made 1-8 inch thick.



(Will cut a perfect groove with or across the grain.)

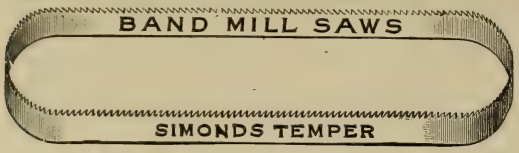
This is the only Dado Head on the market that gives entire satisfaction on all classes of work. No screw adjustment. For different width grooves, simply remove or add inside cutters. Sold by builders and dealers of woodwork machinery in all parts of the United States.

Will send on approval, in competition with any other make on the market; if not the best, return at our expense.

HUTHER BROS., 227-231 Mill Street, ROCHESTER, N. Y.

Manufacturers of Circular Saws, Pat. Lock Corner Box Cutters, &c.

Our Agents for Pacific Coast, California Saw Works, San Francisco.



SIMONDS MFG. CO.

FITCHBURG, MASS. CHICAGO, ILL.

SAWS AND MACHINE KNIVES

OF EVERY DESCRIPTION.

1830—1904

Seventy-four years' experience, and over 18,000 patterns of nothing but

Machine Knives.

Knives to suit every purpose.

Write, giving details to

LORING COES & COMPANY, Inc.

Box 1, Station B, Worcester, Mass.

Mention the Index.

THE STERLING BLOWER SYSTEMS

For Handling Saw Dust and Shavings.

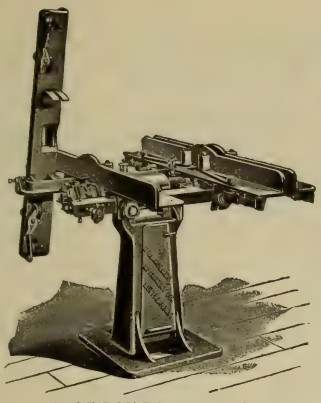
Designs and Estimates furnished free of charge and results guaranteed.

FANS. MORSE CYCLONE DUST COLLECTORS. AUTOMATIC FURNACE FEEDERS.

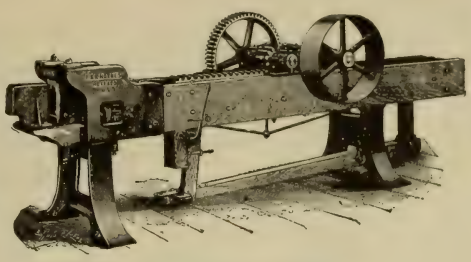
STERLING BLOWER AND PIPE MANUFACTURING COMPANY,

110 Huyshope Avenue, Hartford, Conn.

NEW YORK. BOSTON. GREENSBORO, N. C.



NO. 37 BOX BOARD MATCHER.

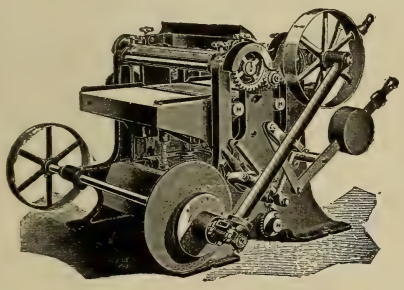


NO. 54 STAVE BUCKER.

Send for our Catalogs.

E. & B. HOLMES MACHINERY CO.

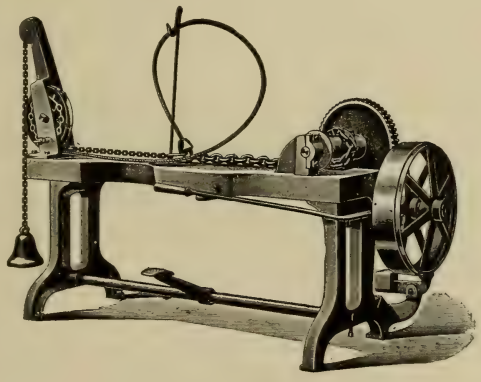
59 Chicago St., Buffalo, N. Y., U. S. A.



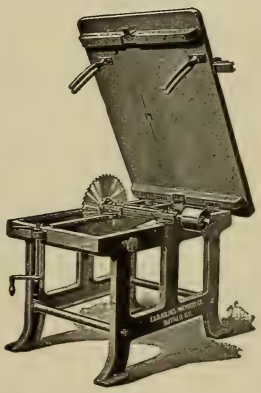
NO. 13, PONY OR HEADING PLANER.

WOOD-WORKING MACHINERY.

BARREL, KEG, HOGSHEAD AND STAVE MACHINERY.



NO, 11 POWER WINDLASS.



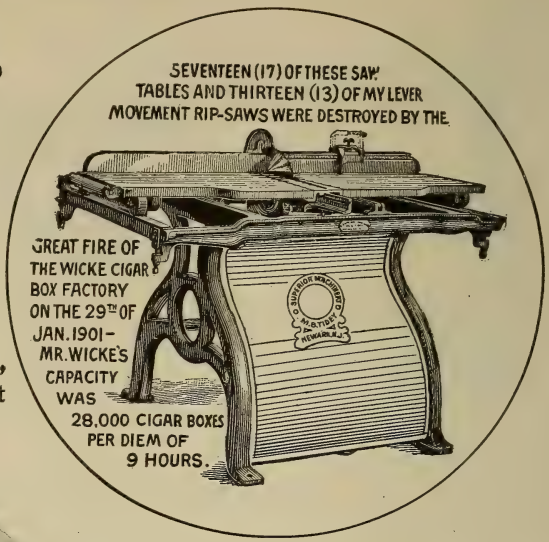
IRON FRAME, WOOD TOP RIP SAW.

Saw Tables.

30 KINDS.

Cut Off and Rip, Etc., Etc.

For Box Makers,
Carpenters,
Sash and Blind
Factories,
Cigar Box Makers,
Jewelry Case Makers,
Furniture and Cabinet
Makers.


SEVENTEEN (17) OF THESE SAW TABLES AND THIRTEEN (13) OF MY LEVER MOVEMENT RIP-SAWS WERE DESTROYED BY THE GREAT FIRE OF THE WICKE CIGAR BOX FACTORY ON THE 29TH OF JAN. 1901 – MR. WICKE'S CAPACITY WAS 28,000 CIGAR BOXES PER DIEM OF 9 HOURS.

M. B. Tidey,

Hedenberg Works,

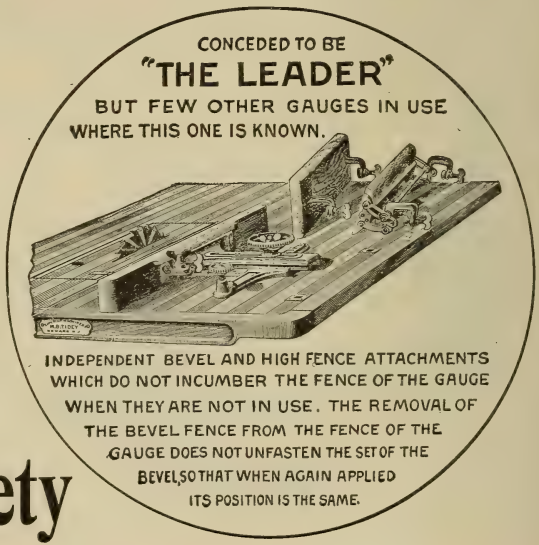
Entrance, 86 Warren Street,

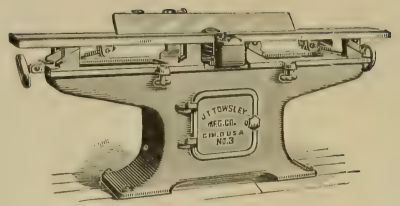
Newark, N. J.

Combination Saw Benches

For Car Shops,
Wagon Builders,
Factories,
Thread and Silk Mills,
Foundries, Pattern and
Machine Shops.
Saw Gauges and
Appliances

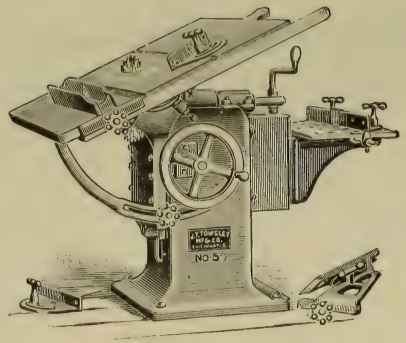
in Great Variety


CONCEDED TO BE
"THE LEADER"
BUT FEW OTHER GAUGES IN USE WHERE THIS ONE IS KNOWN.
INDEPENDENT BEVEL AND HIGH FENCE ATTACHMENTS WHICH DO NOT INCUMBER THE FENCE OF THE GAUGE WHEN THEY ARE NOT IN USE. THE REMOVAL OF THE BEVEL FENCE FROM THE FENCE OF THE GAUGE DOES NOT UNFASTEN THE SET OF THE BEVEL, SO THAT WHEN AGAIN APPLIED ITS POSITION IS THE SAME.



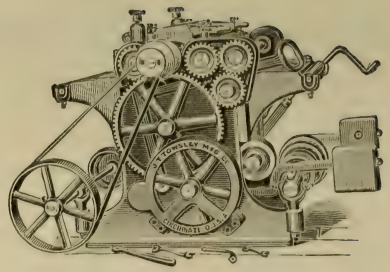
No. 3 Hand Planer.

12, 16, 20 and 24 inches wide; 7-foot tables.



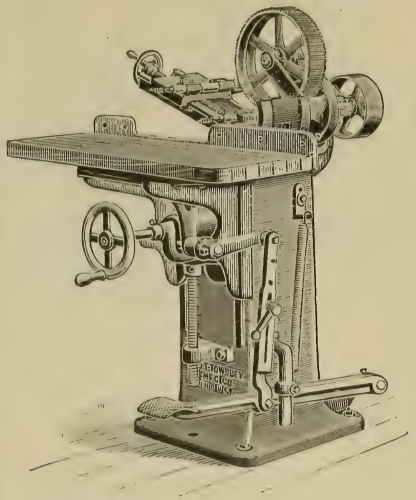
No. 5 1-2. Saw and Dado Machine.

A good tool for general shop use; heavy mandrel and long bearings insure a smooth running machine.



No. 4. Planer and Smoother.

Planes 26 and 32 inches wide, 8 inches thick; cylinder double belted; three speeds of feed; four rolls driven; an elegant machine for general work.



Double Spindle Boring Machine.

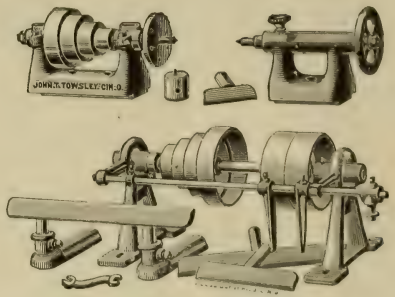
No. 3, to bore two holes from 1 to 12 inches; No 3½, from 1 to 18 inches apart, any position, horizontal to vertical.

JNO. T. TOWSLEY MFG. CO.,

Modern Wood Working Machinery, Glue Room and Factory Appliances.

Mail Us a List of Your Wants.

1049-1059 Evans St., CINCINNATI, O.



New Double-End Wood Lathe.

12, 16 and 20 inch swing. Iron Cones, turned and balanced perfectly to run at a high speed without jarring.

Quickest Mortising

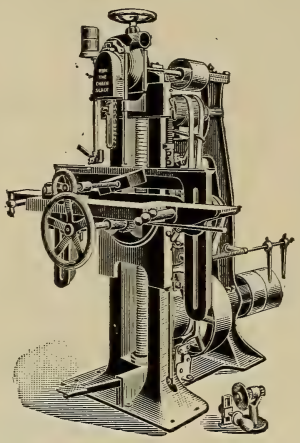
is done on the

Chain Saw Mortiser.

NO BORING.

NO CORE CLEANING.

NO REVERSING.



NO NOISE.

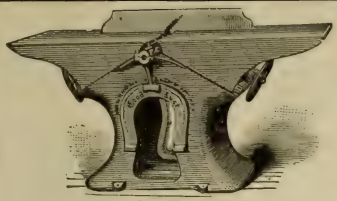
NO SPLIT STOCK.

NO JAR.

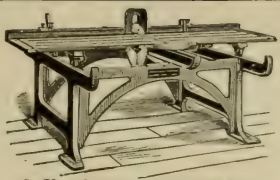
Distributed all over the globe, hundreds of our machines are in use everywhere, giving larger results for less labor cost than is possible with any other type of mortiser. Finished mortises are made in hardest wood at the rate of an inch in depth per second.

The New Britain Machine Co.

88 Chestnut St., New Britain, Conn., U.S.A.

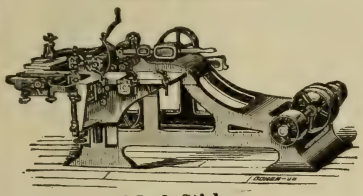


Jointer or Hand Planer

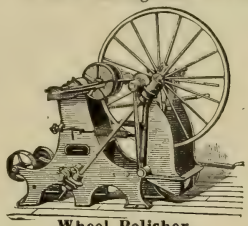


Roller Carriage Cut-Off Saw.

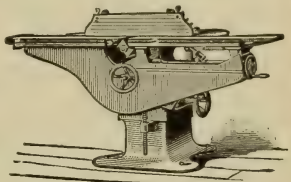
Double Boring Machine.



6-Inch Sticker.



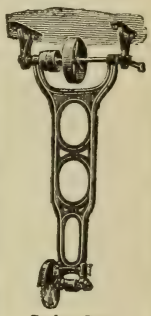
Wheel Polisher.



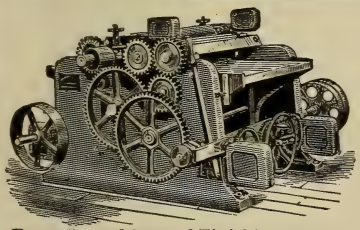
Solid Universal Wood Worker.

Heavy Mortiser.

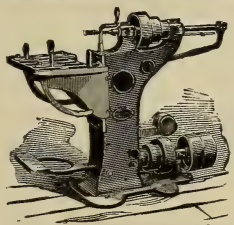
THE BENTEL & MARGEDANT COMPANY.
MANUFACTURERS OF
WOOD WORKING MACHINERY.
HAMILTON, O., U.S.A.



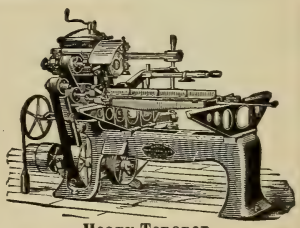
Swing Saw.



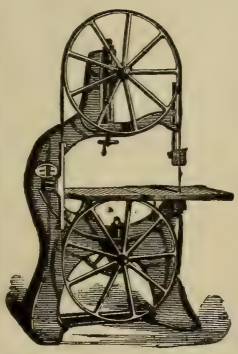
Heavy Smoothing and Finishing Planer.

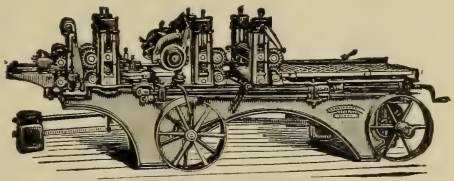


Horizontal Boring Machine.

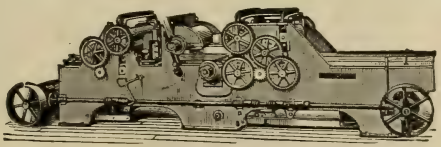


Heavy Tenoner.

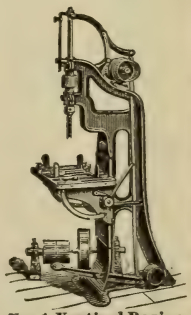




Heavy Planer and Matcher.

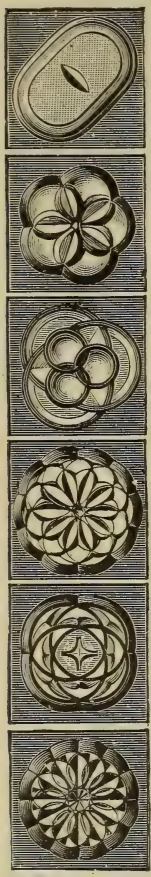


Heavy 4-Side Sill Planer and Matcher.



No. 1 Vertical Boring Machine.

P. PRYIBIL, 512-524 W. 41st St. New York.



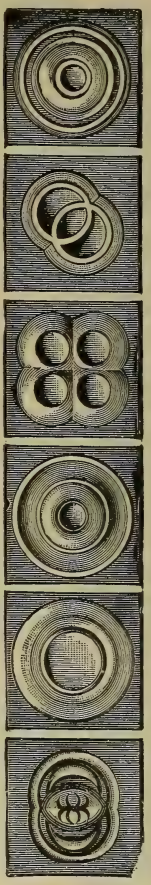
Manufacturers of
High Grade Wood Working
Machinery.

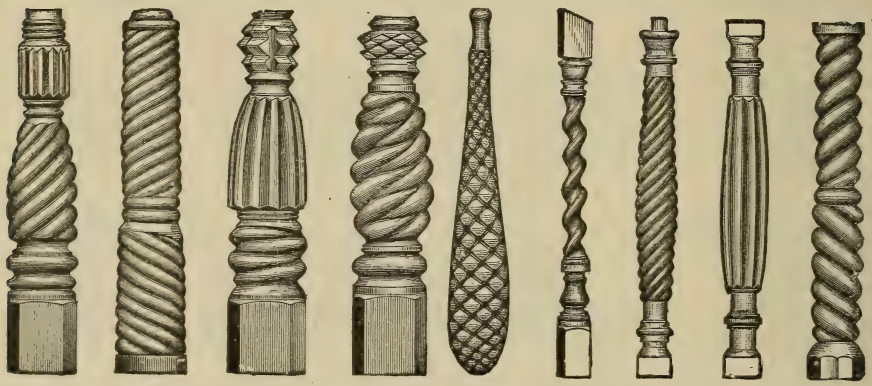
A full line of Cabinet Makers'
and Piano Makers'
Machinery.

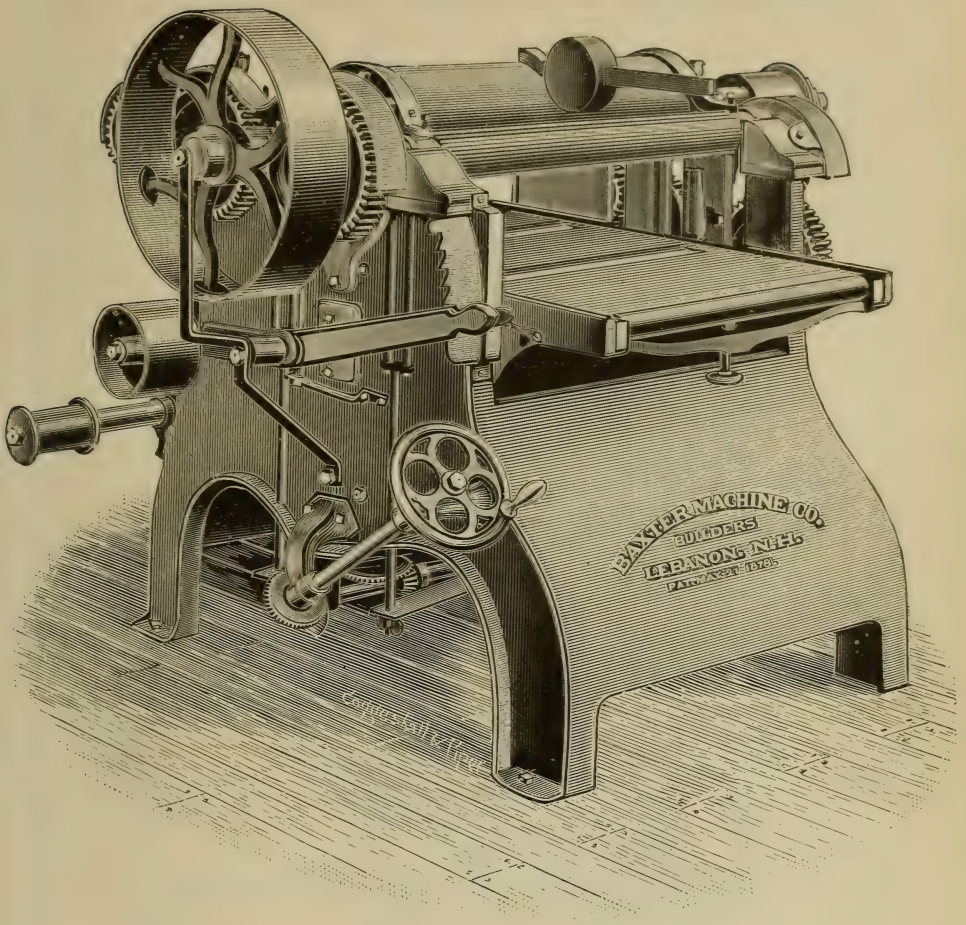
Piano Action Machinery.

Special Machinery.

A few samples of work done
on our Corner Block Ma-
chine and Patent Flut-
ing and Twist Machine are
shown herewith.







The above cut represents our new Pedestal Planer, which we make in two sizes to plane stock 20 and 24 inches wide and 6 and 8 inches thick. It has been our aim to produce a first-class machine in all respects for our patrons, combining in one all the later improvements, and doing away with unnecessary parts and joints so liable to get out of order. Every machine is belted up and thoroughly tested before leaving our works. We guarantee this machine to do as nearly perfect work as is obtainable; and to plane stock as short as four inches without clipping and as thin as 1-20 of an inch. We solicit your patronage.

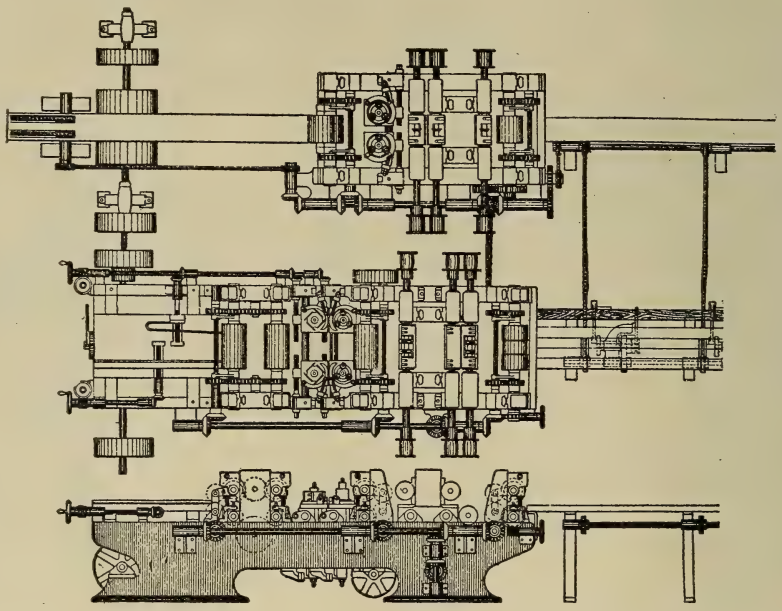
We are also manufacturers of a large line of Wood Working Machinery.

Baxter Machine Co., Lebanon, N. H.

M. V. Purmort, Proprietor.

Wood Working Machinery.

Machines for working boards into two pieces, three pieces, and four pieces of flooring at one operation.



These machines are not for sale but rented to reliable parties for what they can save less cost of men required to work same. Particulars upon application.

The

Greenleaf Wood Working Machine Co.

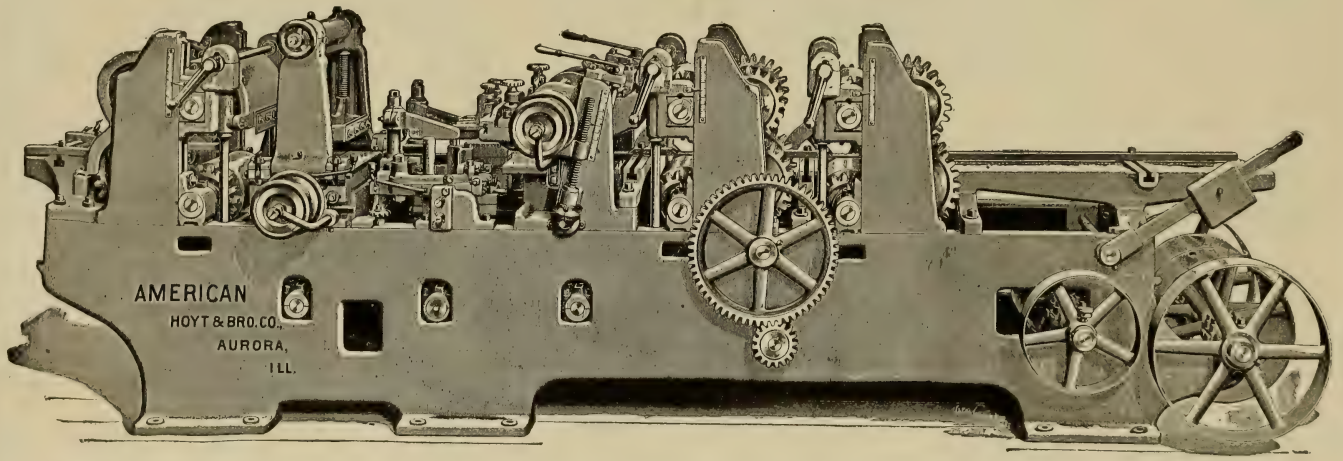
Block, Thames and Philpot Streets,

Baltimore, Maryland, U. S. A.

F. H. Clement Co.
Glen Cove Mch Co., Ltd.
Hoyt & Bro. Co.
The Levi Houston Co.
Globe Mch. Co.

AMERICAN WOOD WORKING MACHINERY COMPANY.

Lehman Mch. Co.
Milwaukee Sander Mfg. Co.
C. B. Rogers & Co.
Rowley & Hermance Co.
Williamsport Mch. Co.
Young Bros. Co.



We build the largest and best line of Wood Working Machinery in the World.

ASK NEAREST SALESROOM FOR CATALOGUE AND PRICES.

SALESROOMS:
136 Liberty Street, New York.
43-45 So. Canal Street, Chicago.

S. A. WOODS MACHINE CO.

(Established in 1854)

SOUTH BOSTON, MASS., U. S. A.

Manufacturers of High Grade

WOOD WORKING MACHINERY

Special and Automatic Machinery

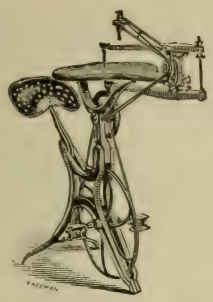
...for...

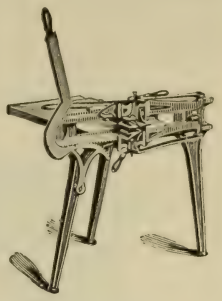
Box Making	Car Building	Planing Mills
Boat Building	Carpenter Shops	Pattern Work
Cabinet Work	Furniture Shops	Ship Building
Carriage Shops	Knife Grinding	Technical Schools

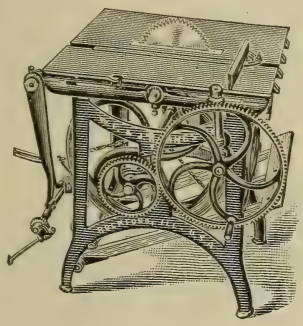
Machinery built for DIRECT MOTOR DRIVE

Owing to the extent of our line we are unable to illustrate, but will be pleased to submit catalogue and details to those interested.

Mention Industrial Press







Foot and Hand Power

Wood Working Machinery.

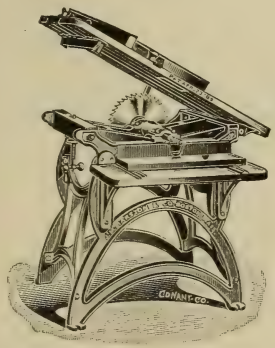
Scroll Saws, Mortiser, Tenoner, Rip and Cross-cut Saws, Lathes, etc.

SOLE MANUFACTURERS

W. F. & Jno. Barnes Company

Rockford, Illinois.

Marston's Power Woodworking Machinery



Power Circular Saw.

Also

Hand and Foot Power

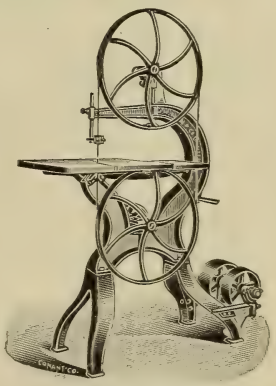
CIRCULAR SAW

and

BAND SAW

N. E. Agents for

HUTHER BROS. GROOVERS



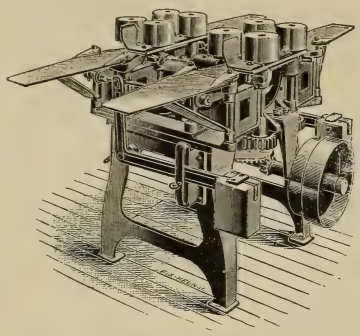
24-inch Band Saw.

Send for Circular and Price List.

J. M. Marston & Co., Columbus Avenue and Ruggles Street BOSTON, MASS., U. S. A.

B. G. LUTHER & COMPANY

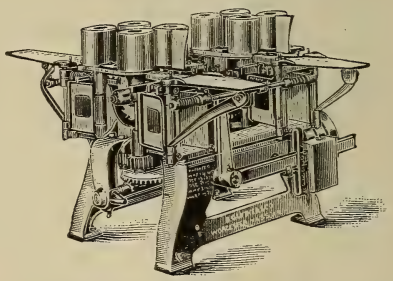
91 FOSTER STREET, WORCESTER, MASS.



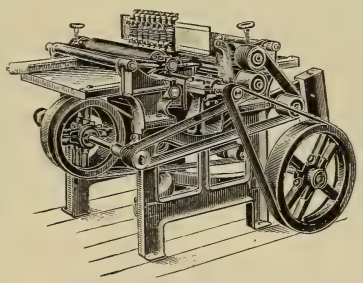
Box Board Matching Machine, No. 1.

Luther's Patent Power Feed Box Board Matching Machines are of original design and will run two boards, one for tongue and one for groove, at the same time. A patent self centering device allows the tongue or groove to be cut exactly in the center of stock of any thickness within the capacity of the machine without adjustment. If desired one pair of feed rolls in each set can instantly be made rigid, allowing stock of unequal thickness to be matched at even distance from the face of the board.

Made in two sizes. Capacity No. 1, ¼ in. to 1¼ in. Capacity No. 2, ¼ in. to 2 in.



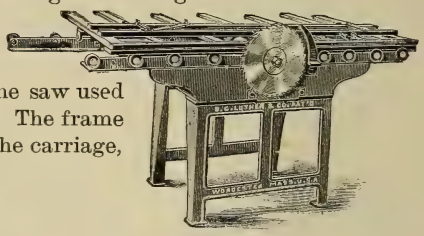
Box Board Matching Machine, No. 2.



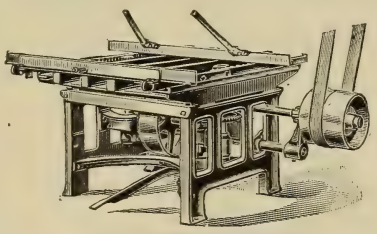
Gang Rip Saw.

Our Power Feed Gang Rip Saws run 4 to 8 saws, which are adjustable or can be removed from arbor without taking off caps. Machines are made entirely of iron or steel, and while particularly adapted for manufacturing packing boxes, can be used to advantage in making builders' finish.

New Patent Fitting and Edging Saw, a very light running and easily operated machine, in which the fitting gauge can be removed and the saw used for cutting up heads or other stock. The frame and all parts of the machine, except the carriage, made of iron or steel.



Fitting and Edging Saw.

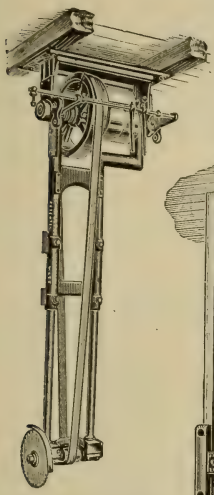


Patent Power Press,

Luther's Patent Power Press for driving up box shooks, doors, sash, blinds, etc., has capacity on various size machines (by changing back bar) from nothing to full capacity of 2, 3 or 4 feet wide, and 6 feet long, according to the size of the machine.

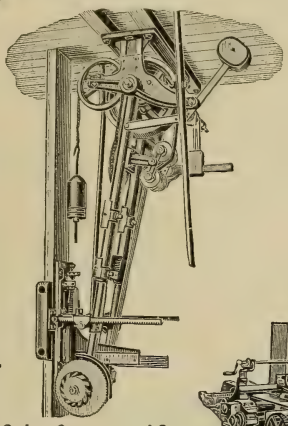
WOOD WORKING MACHINERY

PATENT IMPROVED BOX MACHINERY.



Swing Cut Off Saw.

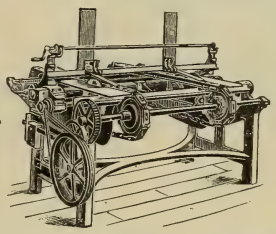
A much needed improvement in swing saws is provided in **Luther's Patent Swing Cut Off Saw,** a strongly constructed machine which is easily superior to anything in its line now on the market. One 14-inch saw goes with the machine. Descriptive circular gives full details.



Swing Groover and Saw.

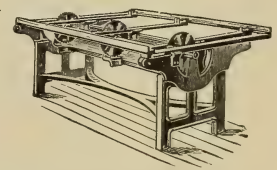
Another addition to labor saving wood working tools is the **Patent Swing Groover and Saw,** an entirely new fixture in a grooving machine, and possessing a number of special advantages. The machine is adapted to be used as a plain cut off saw if desired.

The Patent Automatic Sawing and Grooving Machine is provided with a continuous feed for **double cutting or grooving,** particularly for box making and for use in furniture factories, though adapted to various other kinds of work.



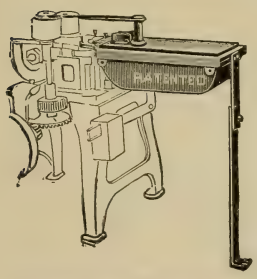
Sawing and Grooving Machine.

Our Patent Double Cut Off Saw is an improvement on the old style machine, being of iron and very compact. Made in various lengths and widths according to work required. Our regular size is 4½ feet by 30 inches wide. We run one, two or more saws, which can be set at any dimensions without stopping the arbor. Saws can also be placed on the arbor or removed without removing the cap screws or belt.



Double Cut Off Saw.

Luther's Patent Glue Attachment is a device designed for use with the Box Board Matching Machine and will glue the boards as they are matched, thus saving the time heretofore required for gluing, besides saving fully one half the glue formerly used. This attachment is easily adjusted and removed, and as the glue is heated by steam or lamp, is always ready for use.



Patent Glue Attachment.

Circulars of our Improved Wood Working Machines mailed to any address.

B. G. LUTHER & CO., WORCESTER, MASS.

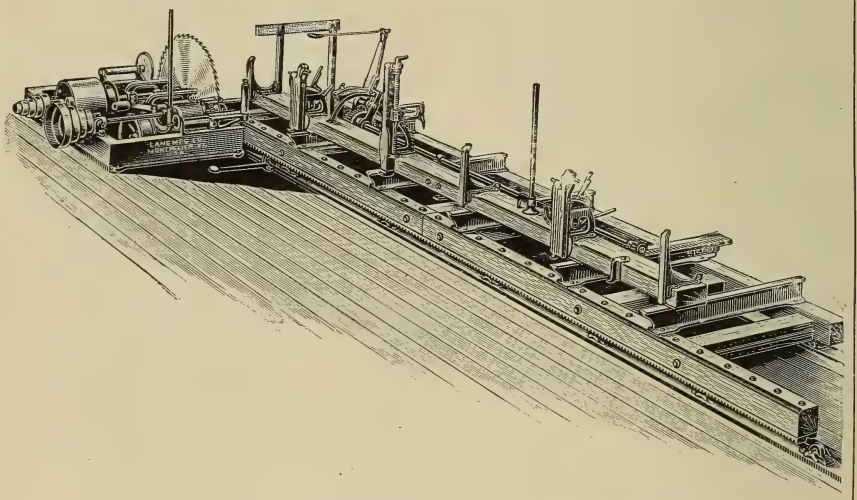
Highest Award, Gold Medal, at the South Carolina Interstate and West Indian Exposition.

THE LANE CIRCULAR SAW MILL.

AS GOOD AS THE BEST MATERIALS, WORKMANSHIP AND FORTY YEARS EXPERIENCE CAN MAKE IT.

All sizes; 3,000 to 50,000 feet daily capacity; adapted to all sizes and lengths of logs; right or left hand; single or double.

Accurate, strong, durable, economical, easy to operate and keep in order, and a producer of good lumber always.



NO. 1 IRON FRAME RIGHT HAND MILL.
Drive pulley can be outside of frame, the cones inside, if preferred.

We can interest any mill man who wants profit producing machinery.

Our illustrated catalogue showing all our Saw Mills mailed to all parts of the World, post-paid.

If interested, let us hear from you.

LANE MANUFACTURING CO.

MONTPELIER, VERMONT, U. S. A.

We also manufacture

The Lane Patent Lever-Set-Works, Dogging Devices and other Appliances.

Water Wheels,
Log Jackers,
Log Canters,
Log Niggers,
Drag Saws,
Swing Saws,
Swing Trimmers,
Timber C/O Saws,
Live Rolls,
Dead Rolls,
Hand Feed Edgers,
Power Feed Edgers,
Hand Feed Table Trimmers,
Power Feed Table Trimmers,
Chain Feed Trimmers,
Lath Machines,
Lath Trimmers,
Traveling Bed Single Surfacers,
Traveling Bed Double Surfacers.
Traveling Bed Timber Surfacers.
Sounding Board Surfacers,
Roll Feed Surfacers,
Matchers,
Cutting-off Tables,
Shingle and Heading Machines,
Shingle Packers,
Clapboard Machinery,
Belt Tighteners,
Car Trucks,
Friction Clutch Couplings,
Wood Rim Pulleys,

And a Complete Line of Transmission Machinery, also

THE ANDERSON PATENT TRAVELING CRANES.

LANE MANUFACTURING CO.

MONTPELIER, VT., U. S. A.

COLE MANUFACTURING CO.

LAKEPORT, NEW HAMPSHIRE.

FOUNDERS, -- MACHINISTS, -- FORGERS.

Rotary Bed Planers. Bobbin and Saw Mill Machinery. Shafting, Gearing, Hangers and Pulleys. Fulling Mills, Dolly Washers and Dye House Machinery. Needle Machinery. Car Axles and Forgings.

WORRALL'S FRICTION CLUTCHES AND PULLEYS.

SEND FOR CIRCULARS.

Telephone Main 3838.

FRANK K. MOORE

WOOD WORKING MACHINERY

New England Agent for

AMERICAN WOOD WORKING MACHINERY COMPANY

And Manufacturer of

RAILEY BACK REST FOR WOOD TURNING LATHES

Warerooms, 143 to 147 Oliver St., Boston, Mass.

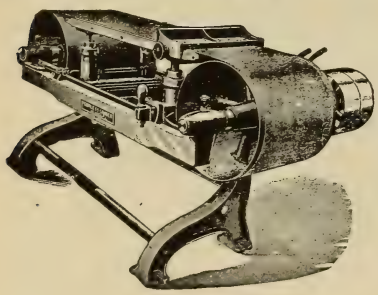
GOODSPEED MACHINE CO.

....BUILDERS OF....

TUB, PAIL, CHAIR, BOBBIN AND SPOOL MACHINERY, BACK-KNIFE GAUGE LATHES, CYLINDER STAVE SAWS, STIMPSONS'S DOVETAIL MACHINES, CHAIR SEAT GROVING MACHINES. ALSO PAIL HANDLE MACHINERY.

WINCHENDON, MASSACHUSETTS.

PEERLESS UNIVERSAL BELT SANDER



This machine is particularly advantageous to manufacturers of Wood Optical Appliances, Wood Electrical Appliances, Telephone Cabinets, Boxes for Surgical Instruments, Cases for Drawing Implements, Music Boxes, Hardwood Rulers for ruling or measuring, Manufacturers of Desks and Furniture, Letter and Document Files and Cabinets, Hard Wood Boxes, Cases and all small work which requires a perfect finish after having been put together. The *PEERLESS* is equally valuable when used with an Emery Belt instead of a Sand Belt, for finishing brass and other metals, where flat surfaces and square edges are required.

WRITE FOR PARTICULARS,

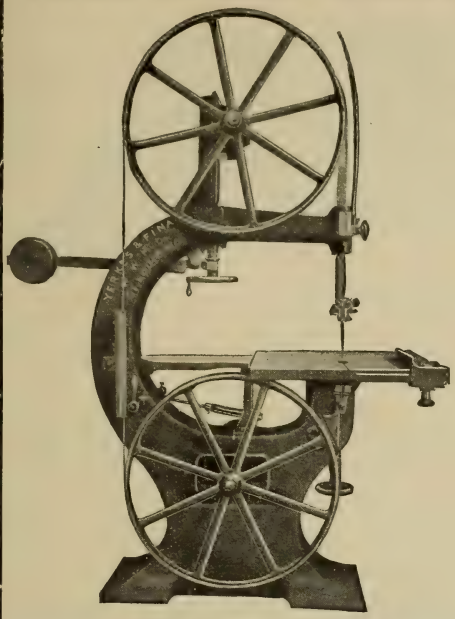
E. J. BEIN,

Patentee and Manufacturer,

199 High Street, Newark, N. J.

Yerkes & Finan Wood-Working Machine Co.

ST. LOUIS, MO.



Manufacturers of a full line of

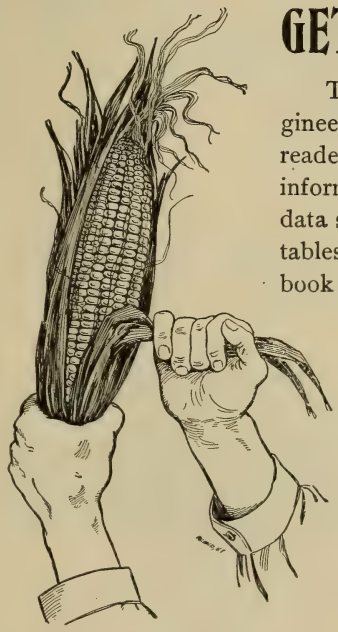
HIGH-GRADE MACHINES

For all Wood-Working Purposes.

Our 36-inch BAND SAW

shown herewith, is one of our latest tools; it is of improved design, has patent guide, table made to tilt at any angle up to 45 degrees. A medium size machine adapted for all ordinary work.

Send for Complete Catalog.



GETTING AT THE KERNEL.

The data sheets published with the Engineering Edition of MACHINERY enable a reader to get at the kernel of a vast amount of information without any waste of time. Each data sheet contains four 6 x 9 pages of original tables, charts and diagrams arranged for note book use. Price $1.00 per set of twelve; 10 cents each. Summary of the last twelve sent free on request.

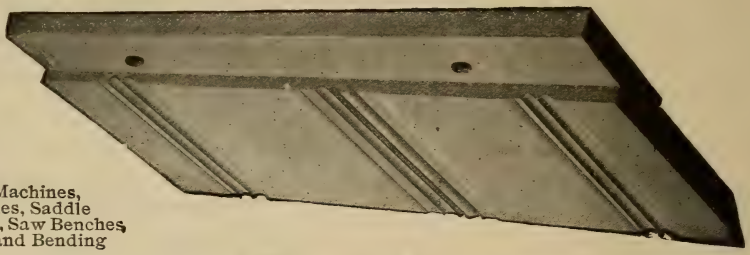
New Binders for Data Sheets.

New binders for data sheets, open back, that will hold an indefinite number, depending on the length of staples used, sent post paid for 25 cents.

THE INDUSTRIAL PRESS, NEW YORK.

GARDNER MACHINE WORKS, GAUGE LATHE BACK-KNIVES High Grade and Fully Warranted.

V Knives and Gouges, Stretcher Lathe Knives, or Dowell Machine Knives, Tenoning Chuck Knives of all descriptions, Boring Machines, Frame Machines, Saddle Seat Machines, Saw Benches, Back Cutters and Bending Presses.



GARDNER MASS.

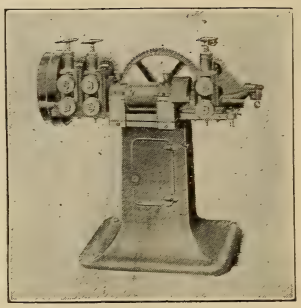
HIGH GRADE

Wood Working Machinery

Special Machinery Built to Order.

Back Knife Lathes,

Dowell, Rod OR Pin Machines.



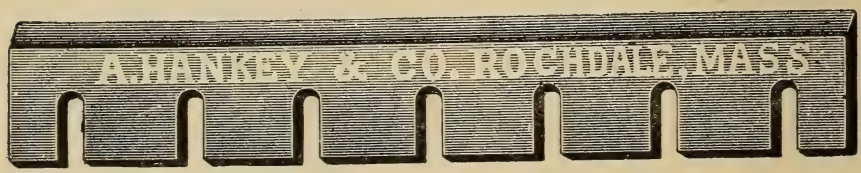
Variety Lathes.

Saw Benches.

DOWELL MACHINE.

C. H. COWDREY MACHINE WORKS,

5 Main Street. FITCHBURG, MASS.



All kinds of Machine Knives. Planer Knives that are absolutely perfect in temper, balance and workmanship. We fill orders promptly from either of our works. Write for catalogue and prices.

A. HANKEY & CO., Inc., Rochdale, Mass.,

and 2235-2237 Vine St., Philadelphia, Pa.

MECHANICAL INDEX
ADVERTISING SUPPLEMENT

SECTION III

POWER PLANT EQUIPMENT, ETC.

SEE ALPHABETICAL INDEX FOR
ADVERTISERS PAGE NUMBERS

Willoughby-St. John PATENT IMPROVED SHAKING GRATE

In use by United States, Russian and Japanese Navies on all vessels built under speed requirements

Low Velocity to Flue Gases, due to large air space and resulting in more heat units being taken up in water.
Can be applied economically to any type furnace. Cleaner flues.

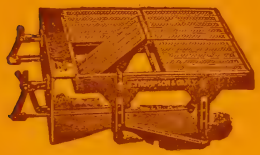
Simple and Everlasting

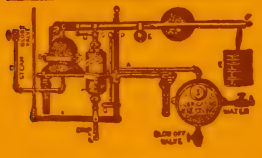
Practically an **entire absence** from **necessity for cleaning fires.**

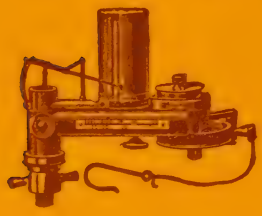
Write for Particulars

A. B. Willoughby, Sect. P. Machy. Dept., The Bourse, Philadelphia, Pa.

WHAT WE CAN DO FOR STEAM USERS.







How we do it, and the result.

We make Shaking, Dumping and Stationary Grate Bars.

To burn coal, not to waste it. Our prices will be as low as the best quality of material will permit. Estimates given. Satisfaction guaranteed. **Booklet "D."**

With a fire all right you should have **Clean Boiler Tubes.** Thompson's Patent Soot Ejector will do this part of the work quickly and thoroughly.

Booklet "C" tells all about it.

With a good fire and clean tubes you will make steam quickly, hence a **Spencer Damper Regulator** will be necessary to regulate it. Over 5,000 in use. Put up on approval. **Catalog "B" sent upon application.**

To complete the series you want an **Indicating Outfit**—one that will show you the results of a well equipped steam plant. **Send for Booklet "A."**

RICHARD THOMPSON & CO.

126 LIBERTY ST., NEW YORK.

Telephone 2361 Cortlandt.

This belt has been treated with Cling-Surface and was transmitting 55 H. P. without the slightest evidence of slipping when photograph was taken. It has done this for 10 months now, day after day. It's a 14 in. belt, 10 ft. centers.

Cling-Surface For Your Belts.

Cling-Surface is a filler for belts. It does its work after it penetrates. It is not a sticky surface dressing.

It permanently stops belt slipping so that full load can be carried with no loss or annoyance.

Because there is no slipping, belts can be run easy, free from dead load of tightening strain.

They will last longer and do more work.

And we guarantee Cling-Surface to preserve them, keeping them pliable and in perfect condition.

Order on trial. Test. Pay only if satisfactory. If not return and we pay all freight.

Cling-Surface Mfg. Co.

177-182 Virginia Street, Buffalo, N. Y.

NEW YORK, 39-41 CORTLANDT ST.
CHICAGO, 607-9 NORTHERN OFFICE BLDG.
BOSTON, 170 SUMMER ST.
PHILADELPHIA, THE BOURSE.
ST. LOUIS, 617 CHESTNUT ST.
TORONTO, 42 ESPLANADE ST.

CARNEGIE STEEL COMPANY,
Homestead Steel Works.

MUNHALL, PA., Nov. 12, 1901.

CLING-SURFACE MFG. CO.,

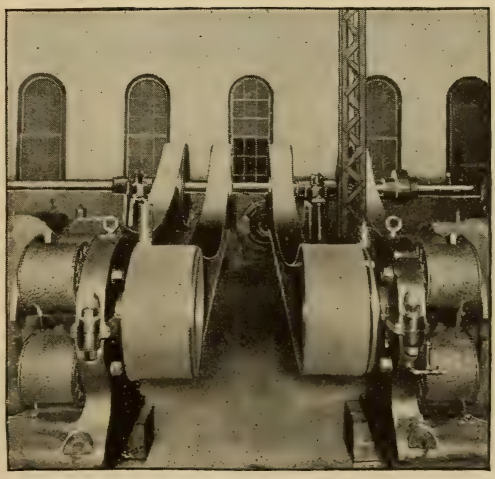
Gentlemen:—In June, 1900, we had the 12-inch belts on 7-80 Brush Arc machines stretched as far as tightening slide would allow, at which point belts would have to be shortened.

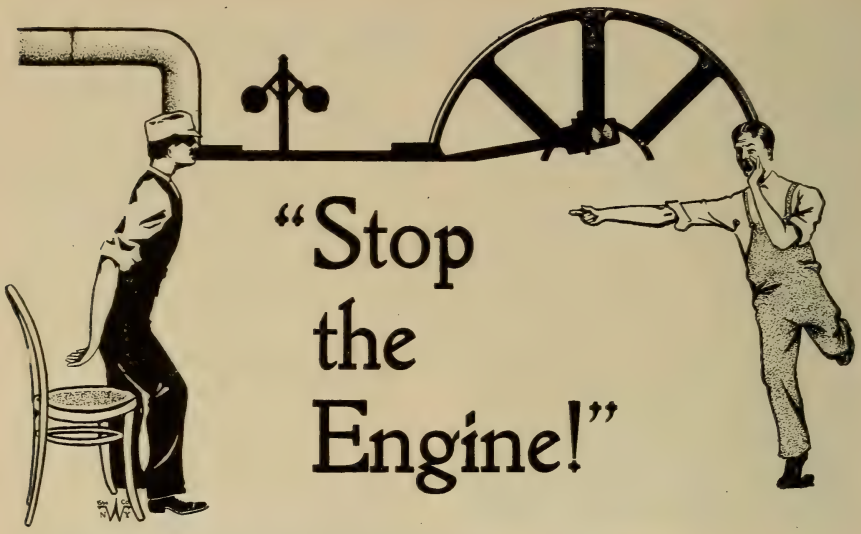
We were using a belt dressing at that time, but still had to carry belts so tight as to run risk of hot bearings. We then began experimenting with several kinds of belt dressing.

Cling-Surface, giving best results, was adopted. We are now running same belts, not yet shortened, slacked up so that they sag to within about 8 inches of tight side when loaded, giving maximum wrap on pulley and minimum side pull on bearings.

We are well satisfied with results obtained, and feel free to recommend Cling-Surface to all belt users.

Yours very truly,
S. S. WALES,
Supt. Electrical Dept.





—Perhaps it is only the breaking of a machine.

—Possibly a workman's life is in danger.

—Either way, the engine must be stopped with the least possible delay.

Factory accidents are likely to happen at any time—they are expen sive and dangerous.

The Engineer can't stand with his hand constantly upon the throttle —ready to act.

But there are times when the engine must be stopped whether he is ready or not.

If your engine was under such control that it could be stopped in less than 30 seconds, and from any point in the factory, the danger element is almost eliminated.

Any kind of an engine can be shut down in 40 to 60 seconds, by simply pressing the button, if the other end is connected with THE MONARCH ENGINE STOP AND SPEED LIMIT SYSTEM.

The Speed Limit is absolutely automatic.

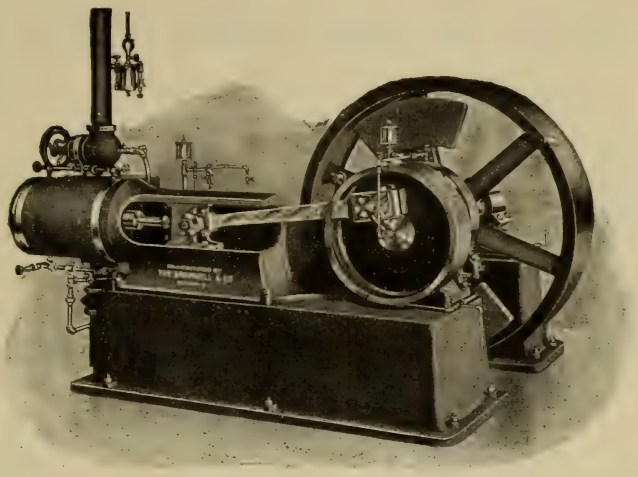
We have two booklets—one for the Employer (No. 1), the other for the Engineer (No. 2)—which one do you want?

A postal will do.

The Consolidated Engine Stop Co.

100 Broadway, New York.

THE SCRANTON LACE CURTAIN CO., PAUL B. BELIN, Gen'l Mgr., Scranton, Pa., says:—"Some time ago, one of the employees in the winding room was caught in the winding machinery. He was caught in such a position that his arm would undoubtedly have been torn off if the machinery had not been stopped. Fortunately the forelady had presence of mind enough to press the button. Everything was running, and under this load the engine stopped very shortly."



Brownell 20th Century Engine.

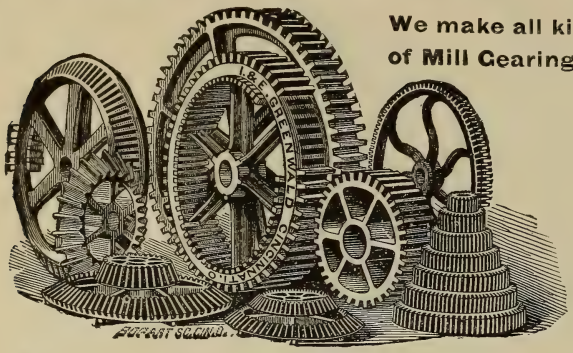
Boilers	**Tanks**
Engines	**Heaters**

....MADE BY....

The Brownell Company,

DAYTON, OHIO.

Mill Gearing.



We make all kinds and sizes of Mill Gearing, and furnish

Steam Power Plants Complete.

Throttling and Automatic Steam Engines, Shafting, Hangers, Friction Clutches, Pulleys, Sprocket Wheels, Chains, Shears, Elevator Buckets, Feed-Water Heaters, Malting Drums, White Lead and Distillery Machinery.

SEND FOR CATALOGUE AND LET US FIGURE ON YOUR WORK.

THE I. & E. GREENWALD CO.,

ESTABLISHED 1847. CINCINNATI, OHIO.

Cable address, "GREENWALD." Western Union Code.

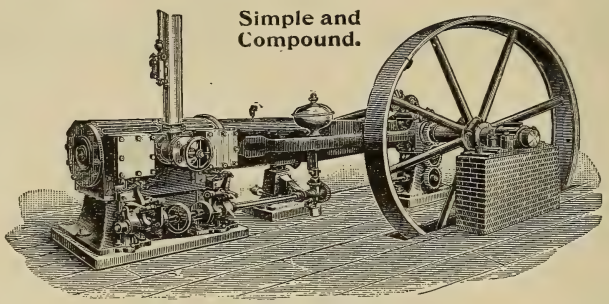
ESTABLISHED 1847.

THE I. & E. GREENWALD CO., CINCINNATI, OHIO.

MANUFACTURERS OF HIGH GRADE

Throttling and Automatic Steam Engines,

Simple and Compound.



We also make **MILL GEARING,** all kinds and sizes.

FEED WATER HEATERS, PULLEYS, HANGERS, CHAINS, ETC.
COMPLETE EQUIPMENT FOR POWER PLANTS.

Send for Catalogue, and let us submit estimate on your work.
Cable address, "GREENWALD." Western Union Code.

The Case Steam Engine

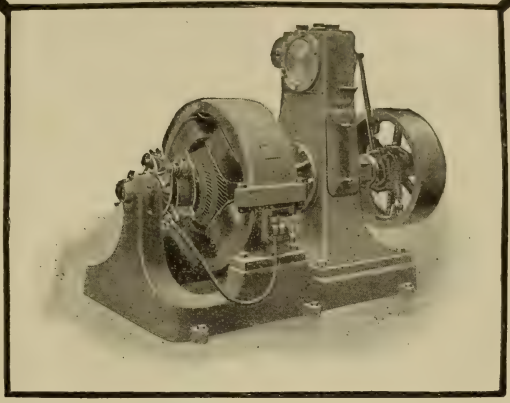
Automatic High Speed.

2½ to 25 H. P. **6 Sizes.**

Close Regulation

Compact Construction

Automatic Lubrication



Light Moving Parts

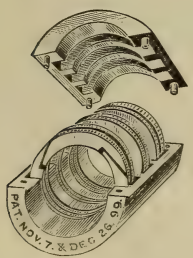
Ample Bearings

Low Head Room

After years of experience in catering to the wants of the most discriminating manufacturers of lighting plants, we are supplying steam motors combining all requisites necessary for dynamo driving, either belted or direct connected. We can furnish prices on complete outfit, using any make of dynamo specified, and we solicit inquiries.

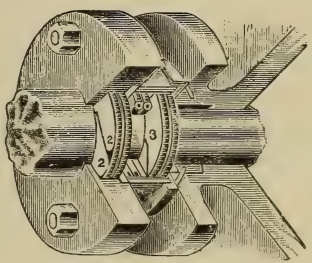
***The* New Britain Machine Co., New Britain, Conn., U.S.A.**

France Metallic Packing



INSIDE SPLIT CASE.

THE VIRTUE IS IN THE RING.



FRANCE'S OUTSIDE SOLID CASE APPLIED.

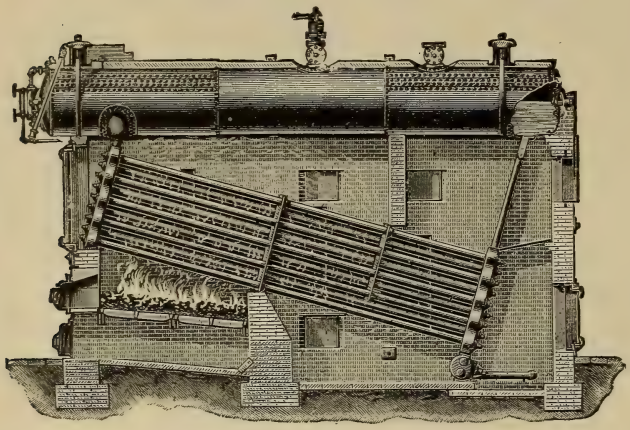
Has won repeated competitive tests. Reduces friction to a minimum, will last as long as any other working part of the engine and will not cut the rod. *Send for catalogue.*

FRANCE PACKING CO., INC.

TACONY, PHILADELPHIA, PA.

BRANCH OFFICES—New York, 237 Sackett St., Brooklyn. Pittsburg, 403 Park Building. Chicago, 1101 Manhattan Bldg. San Francisco, 123 California St., Charles E. Greenfield, Manager. Newark, 143 Commerce St. Cleveland, Ohio, 707 New England Bldg.

Babcock & Wilcox Boilers.

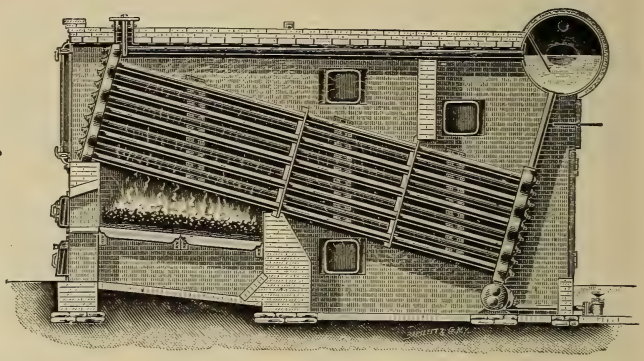


This cut shows
STANDARD
FORM.

Built for
Any Pressure
up to 500 lbs.

SPECIAL
FORM
For Low
Head Room.

Can be knocked
down for
Mule Back
transportation.



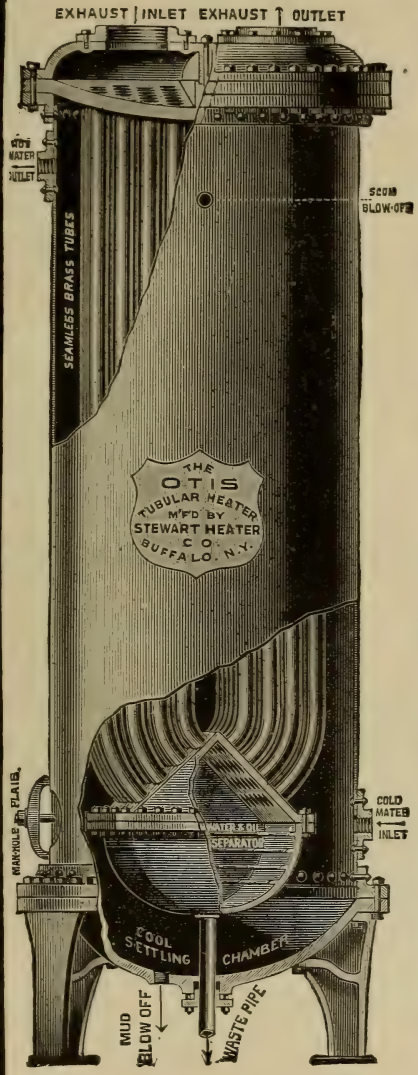
Marine Water Tube Boilers.

Steam Superheaters.

OUR BOOK "STEAM" SENT FREE ON APPLICATION.

THE BABCOCK & WILCOX COMPANY,

85 LIBERTY STREET, NEW YORK.



OTIS Tubular Feed Water HEATER

Oil Separator and Purifier

With Seamless Brass Tubes.

Guaranteed to heat the feed water to the **boiling point** (210 degrees or 212 degrees) with the exhaust steam without causing any back pressure. **Also to extract the Oil from the Exhaust** so that the exhaust steam after being passed through the heater can be used for heating purposes and the water of condensation from the heating system be returned to the boiler without the extra expense of an additional oil separator or eliminator.

We Guarantee this Heater will not get Foul with Sediment.

A LIBERAL OFFER.

Try us! If this Heater fails to Give Satisfaction in every respect we will pay freight, cartage and all expenses, heater to be returned to us at our expense.

POWER PUMPS of all kinds

SEND FOR CATALOG.

Patented and Manufactured by

The Stewart Heater Co.,

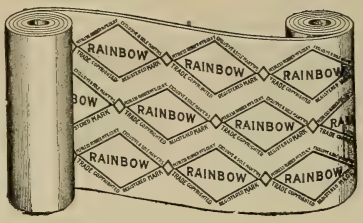
60 East Delavan Avenue, Buffalo, N. Y.

RAINBOW PACKING

Makes Steam, Flange and Hot Water Joints Instantly.

Thousands of Imitators, No Equal.

Will Hold Highest Pressure.



Don't Have to Use Wire and Cloth to hold RAINBOW.

Can't Blow It Out.

THE COLOR OF RAINBOW PACKING IS RED.

Notice our trade-mark of three rows of Diamonds extending throughout the entire length of each and every roll of Rainbow Packing.

It is an undisputed fact that **Rainbow Packing** is the only Sheet or Flange Packing in the world that will carry in stock for months and years without hardening or cracking.

The Peerless Spiral Piston and Valve Rod Packing.

It will hold 400 lbs. of Steam.

1-4 to 2 inch diameter.

Will run twelve months in High Speed Engines.

In Boxes 3 to 8 lbs.

Sole Manufacturers of the Well-known

"Eclipse Sectional Rainbow Gaskets," "Honest John," "Hercules Combination," "Zero," "Success," "Arctic," and "Germane" Packings.

Patented, Copyrighted and Manufactured Expressly by

Peerless Rubber Manufacturing Company,

NO. 16 WARREN STREET, NEW YORK.

FOR SALE BY ALL FIRST CLASS DEALERS.

Omaha 1898-9

Chicago 1893

New Orleans 1876

Selma 1873

Philadelphia 1876

Paris 1900

The Lunkenheimer Specialties

honestly made and always of good value; wherever exhibited, invariably carry off the highest honors.

Specify "LUNKENHEIMER" make and order from your dealer.

Write for catalogue of superior brass and iron valves, whistles, injectors, lubricators, oil pumps, oil and grease cups, etc.

All goods tested and inspected and warranted to satisfy.

The Lunkenheimer Co.,

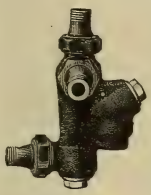
Cincinnati, Ohio, U. S. A.

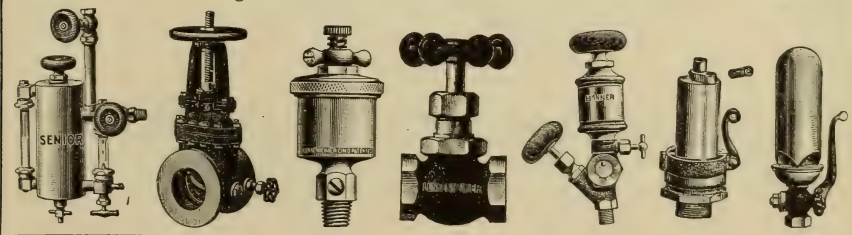
BRANCHES: { NEW YORK, 26 Cortlandt Street. / LONDON, 35 Great Dover Street.

Antwerp 1894

Buffalo 1901

Cincinnati 1874-5

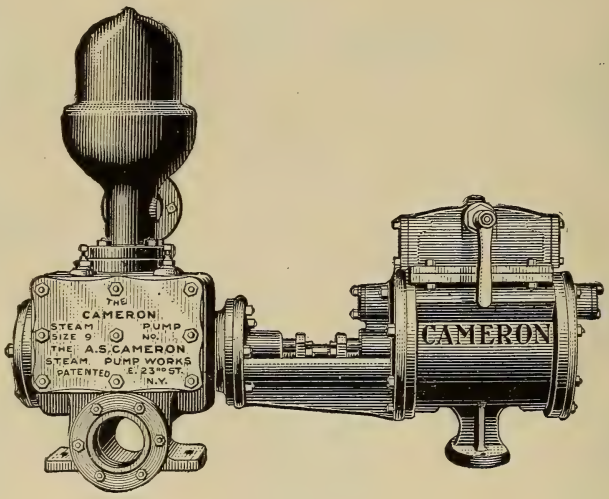




Cameron Steam Pumps

NO OUTSIDE MOVING PARTS.

Entire Mechanism in Steam end Composed of only Four Pieces.



FULLY TESTED AND GUARANTEED.

Send for catalogue illustrating pumps for every possible duty.

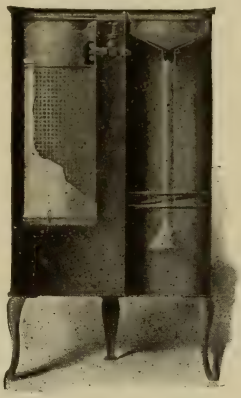
ADDRESS

A.S. Cameron Steam Pump Works

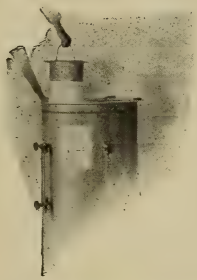
Foot of East 23d St., New York, N. Y.

IN THE
White Star Oil Filter

The filtering cylinder and every part of the filter may be quickly and easily removed and cleaned, enabling it to be always kept in perfect filtering condition. In this most essential feature of a perfect and complete filter, the White Star is not even approached by any other device.



We have published a beautiful booklet "I" entitled "The White Star," containing numerous halftones, showing the entire filtering operation and process of cleaning, and giving full information. Send for it and learn all about a perfect and practical filter.



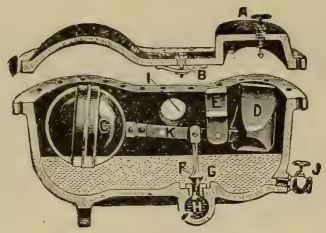
"It has saved us 25 per cent. on our oil bills, besides giving better service than the filter we formerly had. Permit us to congratulate you for making a filter that WILL FILTER."

E. C. HOLLIS, Supt.
Olean Elec. & Power Co., Olean, N. Y.

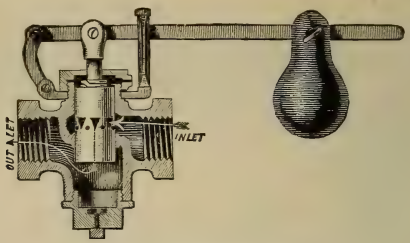
Pittsburgh Gage and Supply Co.
PITTSBURGH, PA.

Eastern Office—1011 Girard Trust Building, Philadelphia.
New York, 136 Liberty St., J. R. Vandyck Co.

OIL FILTRATION EXPERTS.



McDANIEL'S STEAM TRAP.
Discharges Continuously and Never Blows Steam.
Made Extra Heavy for High Pressures.



WATSON'S REDUCING VALVES.
Made for All Purposes.
Steam, Water, Gas and Air.

WE ALSO MANUFACTURE

McDANIEL EXHAUST HEADS, KEYSTONE EXHAUST HEADS,
CHAPMAN STEAM TRAPS, COLUMBIA EXPANSION STEAM TRAPS,
COMBINE SEPARATORS FOR LIVE OR EXHAUST STEAM,
STRAIGHTWAY BLOW-OFF VALVES, EJECTORS,
SUCTION TEES, RELIEF VALVES,
AND OTHER SPECIALTIES FOR STEAM USERS.

SEND FOR CATALOGUE.

WATSON & McDANIEL CO., 146 N. 7th St., Philadelphia, Pa.

The Whitlock Coil Pipe Co.

....MANUFACTURERS OF....

The American Standard Copper Coil Feed Water Heater,
The American Berryman,
The American Hot Water Heaters,
The American Separator,
The American Exhaust Head.

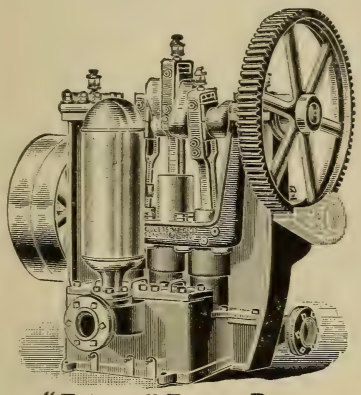
Also Iron, Brass and Copper COILS for HEATING and COOLING.

The Whitlock Coil Pipe Co., Hartford, Conn.

New York Office, 85 Liberty Street.

GOULDS'
Power Pumps

For Every Service.



"Triplex" Power Pump.

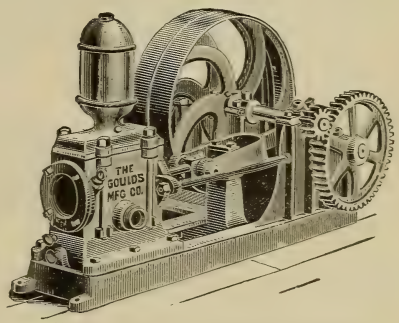
For over 50 years we have been constantly making

Pumps and Hydraulic Machinery

and can supply your needs for large or small pumps operated by any power.

OUR NEW FACTORY is equipped especially for the manufacture of POWER PUMPS.

Our facilities for handling large orders are unsurpassed.



"Challenge" Power Pump.

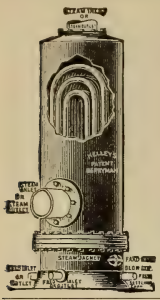
Write for Catalog and Estimates.

The Goulds Mfg. Company,

Seneca Falls, New York.

New York. Boston. Chicago.

The Improved Berryman (Kelley's Patent)



(Water Tube) Feed Water Heater and Purifier

Made with our improved base for heavy pressure duty, it cannot get out of order with the highest boiler pressure it is possible to carry.

Note settling chamber, entirely surrounded by steam jacket.

Ample size hand hole provided for additional cleaning.

This heater is designed with special reference to obtaining highest results and greatest durability. All materials are of a quality and weight to successfully withstand years of usage, and workmanship is of the highest grade.

Benj. F. Kelley & Son,
MANUFACTURERS,
91 Liberty St., New York.

WE MAKE A SPECIAL SPECIALTY OF SPECIALTIES.
BOSTON Steam Specialty COMPANY —INC.—
Trade Mark Registered

Manufacturers and Jobbers
of
TOOLS AND MATERIALS
for
Steam Fitters,
Plumbers,
Water Works,
Steamships
and Mills.

GEIPEL'S PATENT STEAM TRAP.

Works equally well with High or Low Steam Pressure.

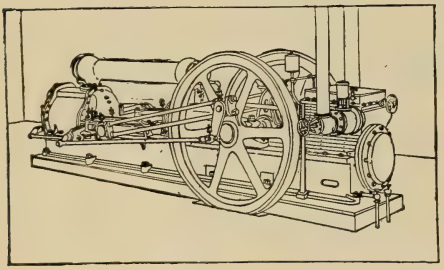
Highest Award Paris Exposition, 1900.

For sale by all Leading Dealers.

PRICES LOW.

Manufactured by THORPE, PLATT & CO., 97 Cedar Street, New York.

AIR AND GAS COMPRESSORS.



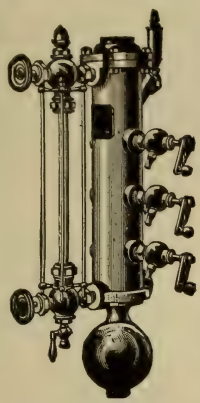
THE NORWALK IRON WORKS CO.

SOUTH NORWALK, CONN.

PATTERNS AND SIZES IN GREAT VARIETY.

CIRCULARS.

RELIANCE SAFETY WATER COLUMNS



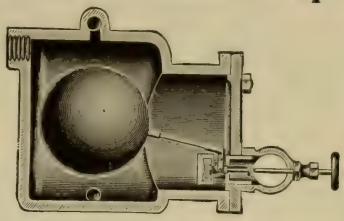
They cause the water to be carried uniformly at the proper level. The best steam users of all classes use them.

ADVANTAGES:

Dry Steam. Steady Power.
Less Leaky Tubes.
No Burned Boilers.
Less Waste of Fuel.
No Boiler Explosions.

Reliance Columns have been on the market for years and are in use in every state and territory in the United States, and in many foreign countries They are in no wise experimental. More Reliance Columns are in use than all other safety water columns combined. Over 35,000 in daily use. Guaranteed to work perfectly. Have them specified for new boilers.

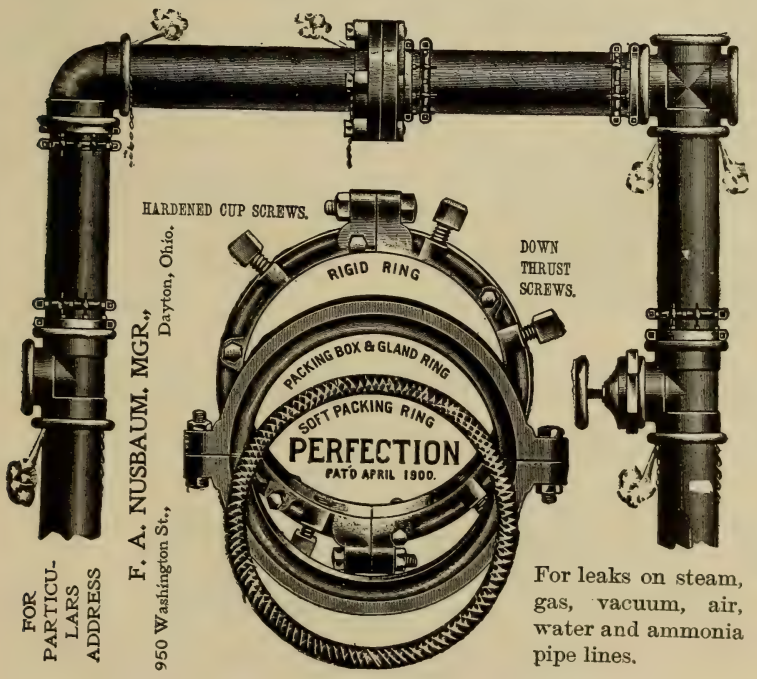
Reliance Steam Traps.



Correct in Principle.
Well made.
Mechanical in design.
Operates with a float balance valve. Works under low or high pressure. Easily accessible for inspection.
Unexcelled in capacity, efficiency and durability. Write for circulars and prices.

THE RELIANCE GAUGE COLUMN CO.

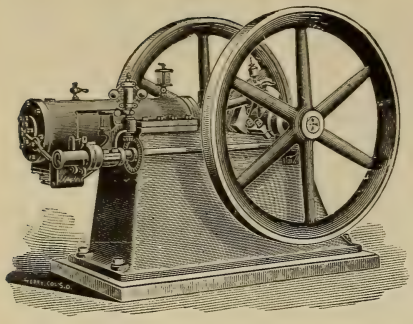
Sole Manufacturers, **78 E. Prospect St., Cleveland, O.**



FOR PARTICULARS ADDRESS
F. A. NUSBAUM, MGR.,
950 Washington St., Dayton, Ohio.

For leaks on steam, gas, vacuum, air, water and ammonia pipe lines.

AT LESS THAN $1.00 PER INCH WE STOP ALL YOUR LEAKS AND SAVE YOUR DOLLARS. THE PERFECTION LEAK CLOSING CLAMP DOES IT. GUARANTEED AND SENT ON APPROVAL. WRITE FOR OUR OIL FILTER AND CLAMP PRICES AND REFERENCES. OUR GOODS SECOND TO NONE.



"Columbus" Gas and Gasoline Engines

Built by

Columbus Machine Co.

Columbus, Ohio.

Simple, easily adjusted, understood and operated.

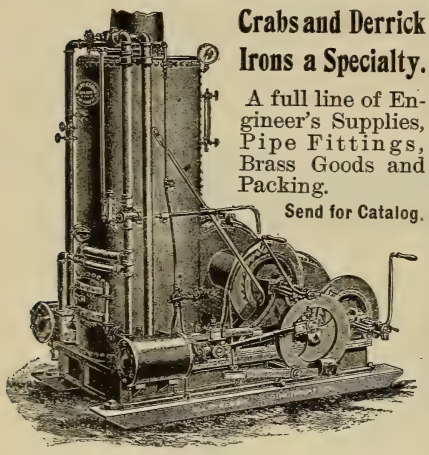
Send for Catalogue 36.

H. J. McKeown

612 E. Front St., Cincinnati, Ohio

MANUFACTURERS OF

Stone Hoisting and Pile Driving Engines

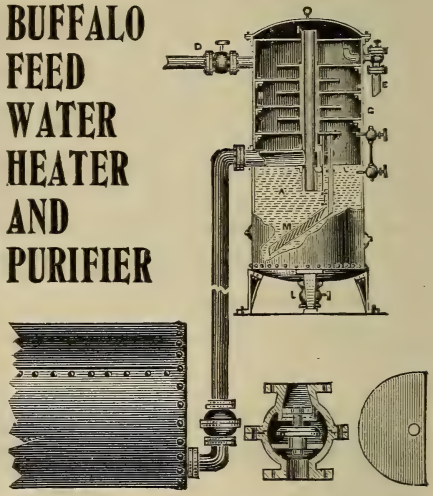


Crabs and Derrick Irons a Specialty.

A full line of Engineer's Supplies, Pipe Fittings, Brass Goods and Packing.

Send for Catalog.

BUFFALO FEED WATER HEATER AND PURIFIER



SEND FOR PARTICULARS.

ROBERT LEARMONTH,

Mechanical Engineer and Manufacturers' Agent,

100 WHITE BUILDING,

BUFFALO, - NEW YORK.

I. G. MARSTON & COMPANY

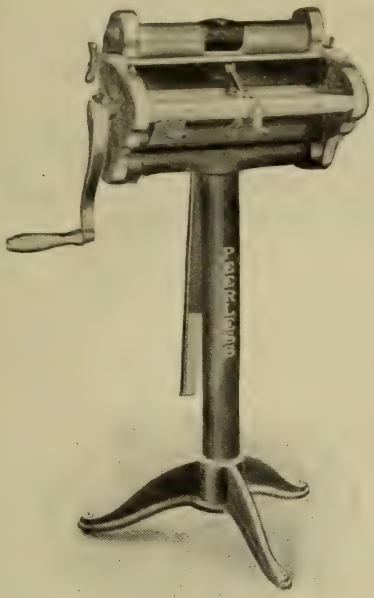
226 Ruggles Street, Boston, Mass.

Manufacturers of

Leather Pump Valves and Cup Leathers.

Washers of all kinds, Leather,

Rubber, Cork, Paper, Felt, Etc.



Peerless Belt Lacing Machines

Time Savers
Money Savers

Send for Catalogue.

Manufactured by

Peerless Belt Lacing Machine Company

Swanson and Moore Sts.
Philadelphia, Pa.

Information

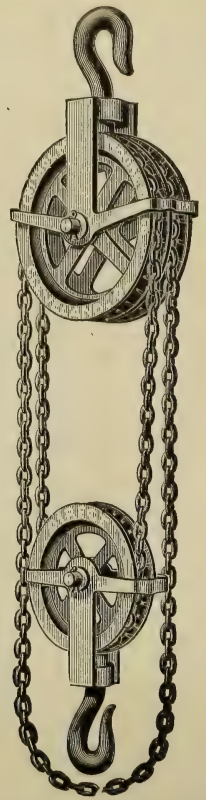
concerning any kind of machinery or supplies desired, addresses of manufacturers, etc., will be furnished to any of our readers on request.

Address, Information Department

MACHINERY

66-70 West Broadway, - New York

"Direct" Differential Pulley Block.



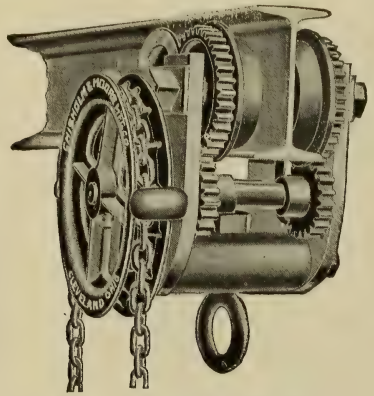


Fig. 112. Geared Trolley.

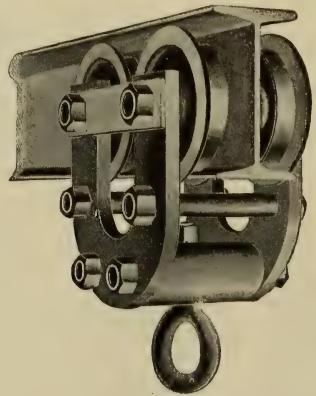
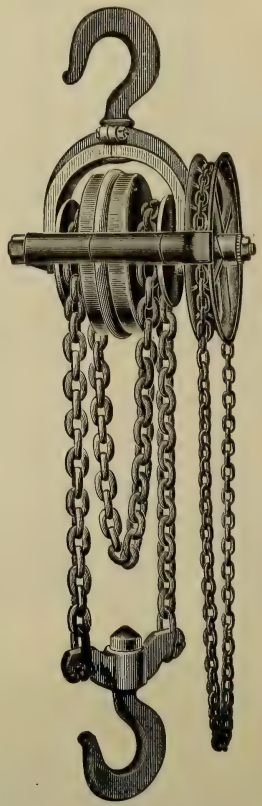


Fig. 113. Plain Trolley.



"Moore" Anti-Friction Chain Hoist.

Geared and Plain Yoke Trolleys

Forged Frame, Steel Roller Bushed.

Adjustable to any size I Beam. Nine sizes, 1 to 10 tons capacity.

The "Moore" Anti-Friction Chain Hoists

Powerful, Durable, Easy Working. Eleven sizes, 1-2 ton to 15 tons capacity.

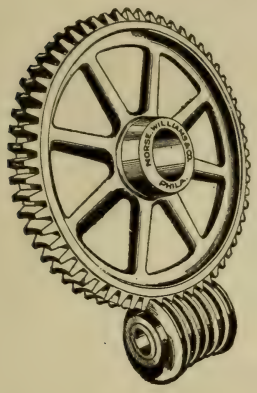
"Direct" Differential Pulley Blocks

Six sizes, 1-4 ton to 3 tons capacity.

The Chisholm & Moore Mfg. Co.,

Cleveland, Ohio, U. S. A.

Hindley Worm Gearing



has twenty-five per cent greater efficiency than ordinary gearing and lasts longer

FREE CATALOGUE ON APPLICATION

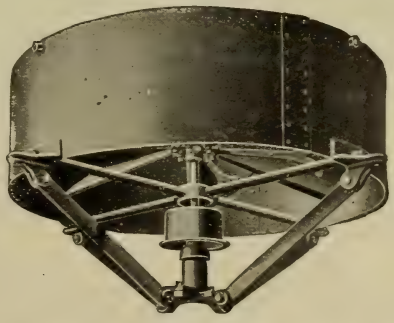
Morse Williams & Co.

PHILADELPHIA, PA.

B. F. PERKINS & SON,

HOLYOKE, MASS.

Manufacturers of Perkins' Patented Ventilating and Exhaust Fans, for every possible requirement, including twenty-two different styles. If interested write for illustrated catalogue.



Style "L" Our Improved Horizontal Steel Fan.

AIR COMPRESSORS HOISTS

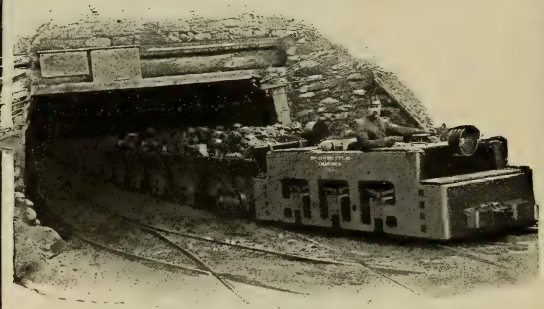
ROCK CORE DRILLS

RAND DRILL COMPANY,

128 BROADWAY, NEW YORK.

JEFFREY MACHINERY

For Mines, Mills, Factories, Power Houses, &c., &c.



Elevating, Conveying, Power Transmission, Screening, Crushing, Dredging, Coal Mining, Coal Washing, and Coal and Rock Drilling Machinery, Electric Locomotives.

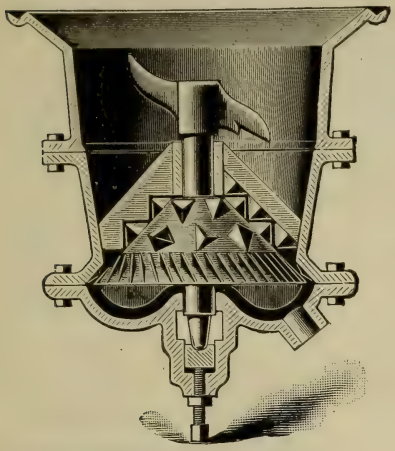
SEND FOR OUR CATALOGUES. ADDRESS

The Jeffrey Mfg. Co., Columbus, O.

New York, Denver, Buffalo, Philadelphia, Pittsburg, Charleston, West Virginia, Chicago, New Orleans, Mobile, Kansas City, Omaha.

The Eureka Corn and Cob Crusher

No. O.



Sectional View of No. 0 Corn and Cob Mill Geared Above.

THE BEST AND CHEAPEST.

Grinds More Rapid and Uniform, Consumes Less Power Than Any Mill Made.

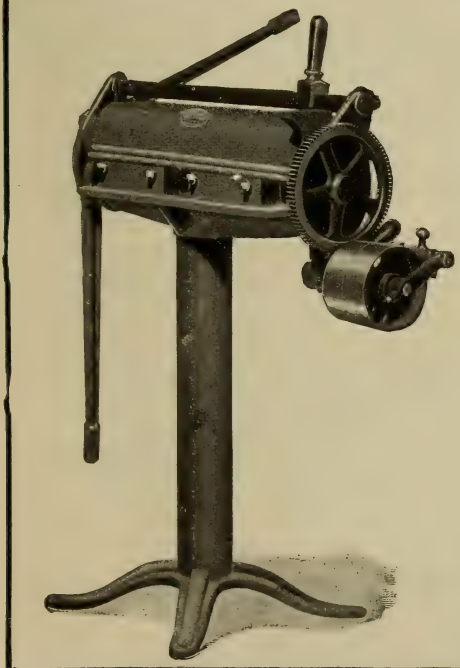
CAPACITY 15 TO 60 BUSHELS AN HOUR.

Made of Hardened White Iron. All Parts Duplicated with Accuracy.

64 PAGE CATALOGUE SENT ON APPLICATION.

ATTRACTIVE PRICES.

Eureka Bark Mill Company, 347 East Fulton Street, Lancaster, Pa.



Lace Your Belts with the

Jackson Belt Lacing Machine.

and save time and money. Laces a six-inch belt in three minutes—laces a five inch belt with wire coil lacing at a cost of one cent. Does the work better than can be done by skiving or gluing, makes an even join, alike on both sides, and lasts longer than any other kind of lacing. Easily and quickly removed when different adjustments are required.

6,000 inches Coil Clasp Lacing FREE with each machine.

Send for our Catalog and prices.

Diamond Drill and Machine Co.

Furnace Street, BIRDSBORO, PA.

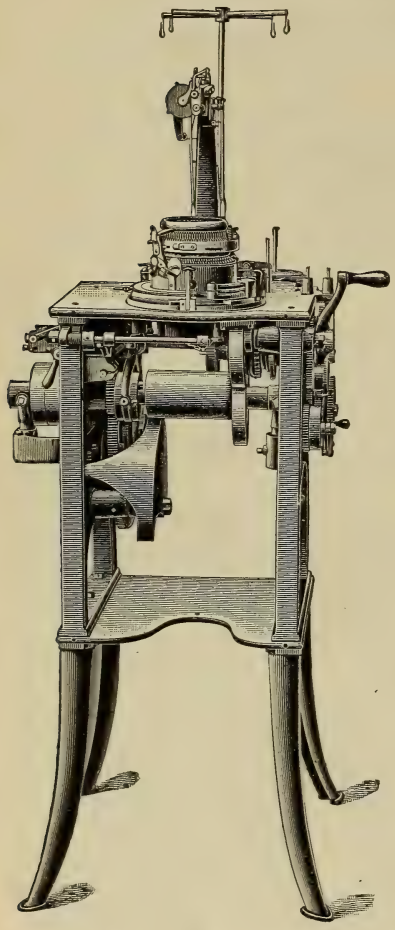
Mayo Knitting Machine and Needle Company,

FRANKLIN, N. H.

Manufacturers of

Automatic Knitting Machinery

For Seamless Hosiery.



Best method of Transferring

Ribbed Legs and Tops.

Highest speed, and consequently

Greatest Production.

Positive splicing device for heel and toe.

Perfect Yarn Changer for substituting different yarn in heel and toe.

High spliced heel and double sole.

Imitation lace front and instep.

Automatic two color stripers.

Complete Knitting Plants Furnished.

We also manufacture a complete line of

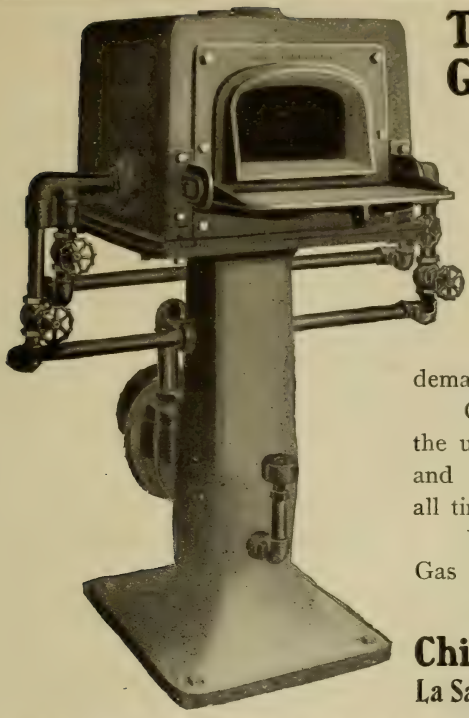
Latch Needles

for all makes of machines.

The Acme Full Automatic Knitter.

Philadelphia Office and Showrooms:

Knickerbocker Building, 6th and Arch Sts.



The Stewart Gas Blast Furnace

For heating, tempering and hardening high grade steel tools or work of similar character.

Heats the steel with absolute evenness, entirely removes the element of uncertainty, does the work in half the time and requires only a fraction of the care demanded by other methods.

Compact, convenient, economical in the use of gas, makes no dust or ashes and heat is under perfect control at all times.

We make 55 styles and sizes of Gas Furnaces.

Catalogue shows full line.

Chicago Flexible Shaft Co.
La Salle Ave. and Ontario St., Chicago, Ill.

METAL WORKING FURNACES

FOR OIL, COAL OR GAS FUEL.

FUEL OIL BURNING APPLIANCES.

WRITE FOR CATALOGUES.

ROCKWELL ENGINEERING CO., 26 Cortlandt St., New York.

"Quality Our First Consideration."

We ship promptly as we have a foundry with 50,000 ft. floor space thoroughly equipped with every facility for making large and small castings of Deoxidized, Ordnance, Phosphor, or Commercial Bronze, also Aluminum, Copper, Composition, and Brass Castings.

OUR PRICES WILL INTEREST YOU.

BRIDGEPORT DEOXIDIZED BRONZE AND METAL COMPANY,

431-459 Iranistan Ave. and 1 to 99 Admiral Street,
BRIDGEPORT, CONN.

Fleming Harrisburg Engines

Built in 16 Styles, 900 Sizes.

For Driving Direct Connected or Belted Machinery at Uniform Speeds, High Efficiency, and with minimum attention and repair, offered to discriminating purchasers who seek careful investment in steam power.

Harrisburg Foundry and Machine Works,

General Office and Factory, Harrisburg, Pa.

——BRANCH OFFICES——

Boston Philadelphia Baltimore New Orleans St. Louis Salt Lake City San Francisco
New York Pittsburg Atlanta Chicago Denver Seattle Los Angeles Houston

Smith Mfg. Co.

Waynesboro, Pa.

Bridges,	Steel Fence,
Roof Trusses,	Entrances,
Columns,	Tanks,
Stairways,	Galv. Steel Ice Cans,
Fire Escapes,	Steel Swings,
Lock-up Cages,	Steel Settees,
Builders' Iron Work,	Structural Iron Work,
Ornamental Iron Work,	Bridge Railing.

Foundry Equipment

Manufactured by

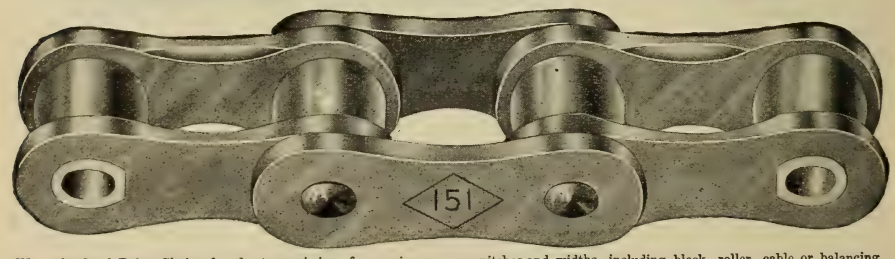
J. W. Paxson Company,

PHILADELPHIA, PA.

Plumbago Facings.
Paxson Colliau Cupolas.
Bull and Geared Ladles.
Moulding Sands, etc.

SAND BLAST MACHINERY.

DIAMOND MACHINERY CHAINS.



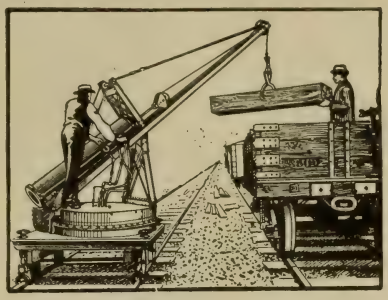
We make Steel Drive Chains for the transmission of power in numerous pitches and widths, including block, roller, cable or balancing, and Tubular Rivet Chains. Suitable for various machinery and automobiles. Write for Catalog.

FEDERAL MFG. COMPANY,

DIAMOND CHAIN FACTORY, - - Indianapolis, IND.

GARRY ELECTRIC OR PNEUMATIC REVOLVING CRANE

For use in loading and unloading freight cars, boats, coaling locomotives, or for handling heavy materials of all kinds.



Mounted on car with standard track gauge. May be run to all parts of the yard. Rapid, durable and the most efficient crane made.

Capacity 1,000 to 10,000 lbs. Built to any specifications.

The Garry Iron and Steel Company

Cleveland, Ohio, U. S. A.

GENERAL MACHINE AND STRUCTURAL IRON WORK.

IF YOU HAD TIME

—say 30 or 40 hours a day, you could read all the technical papers of the world; you could travel among the shops and power plants, seeing and noting new things; you could get in close touch will all classes of men engaged in mechanical affairs—if you had time. MACHINERY does all this for you and does it thoroughly. It gives you, at nominal cost, the services of many men instead of one. It renders a monthly report of progress in mechanical industries; describes the *methods* and the *equipment* of the leading shops; gathers the news in the mechanical world carefully and systematically and presents it in an attractive way—it is in fact a paper almost indispensable to the progressive engineer and mechanic.

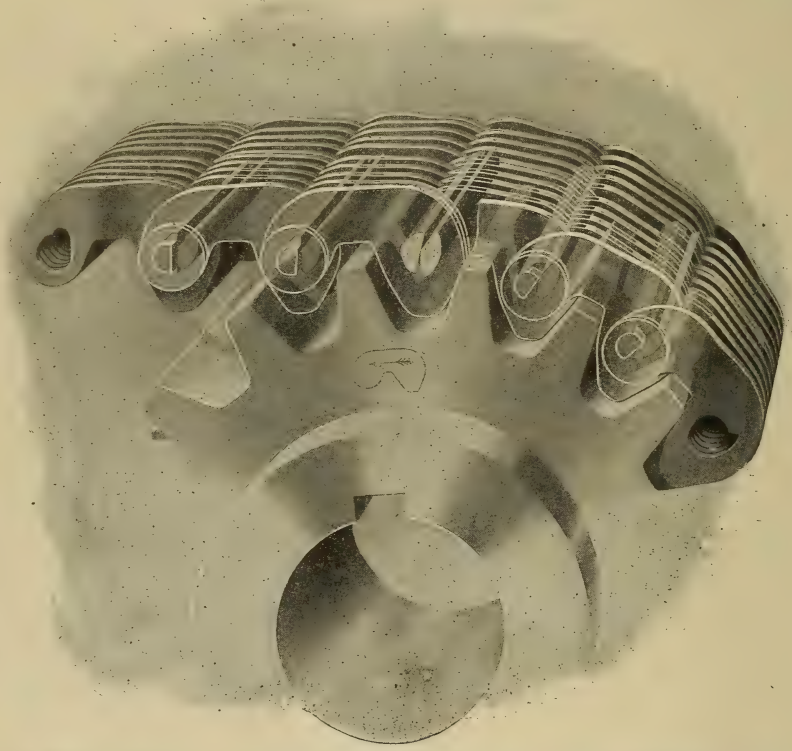
Subscription price: Engineering Edition, $2.00 a year.
Shop Edition, - 1.00 a year.

The Industrial Press, 66-70 West Broadway, New York.

JUL 23 1904

Morse Flexible Gearing

The most efficient power transmitter made and applicable to a range of service extending from the heavy main drives direct from engine or motor with short centers, to the light drives of individual machines or machine feeds.



The Morse Chain is noiseless, will convey the maximum of power, can be run at highest speeds, used where belts or gears would be useless, is not affected by heat, dust or moisture, is constructed to stand the hardest service and will not grow slack nor lengthen from lack of lubrication. It is particularly adapted for high speeds, because the *rocker joint*—the essential feature of the chain—*requires no lubrication.*

If you are interested in the modern method of transmission of power, write for catalogue.

Morse Chain Co., Trumansburg, N. Y.

LIBRARY OF CONGRESS
0 029 986 636 1